

**FINAL—Archaeological Inventory Survey for Improvements
to Girl Scout Camp Kilohana, Ka‘ohe Mauka Ahupua‘a,
Hāmākua District, Island of Hawai‘i**

TMK: (3) 4-4-015:005



Prepared For:

Girl Scouts of Hawai‘i
410 Atkinson Drive, Suite 2E1, Box 3
Honolulu, HI 96814



October 2018

Keala Pono 

Keala Pono Archaeological Consulting, LLC • PO Box 1645, Kaneohe, HI 96744 • Phone 808.381.2361

**FINAL—Archaeological Inventory Survey for Improvements
to Girl Scout Camp Kilohana, Ka‘ohe Mauka Ahupua‘a,
Hāmākua District, Island of Hawai‘i**

TMK: (3) 4-4-015:005

Prepared For:

Girl Scouts of Hawai‘i
410 Atkinson Drive, Suite 2E1, Box 3
Honolulu, HI 96814



Prepared By:

Windy McElroy, PhD
and
Dietrix Duhaylonsod, BA

October 2018



Keala Pono Archaeological Consulting, LLC • PO Box 1645, Kaneohe, HI 96744 • Phone 808.381.2361

MANAGEMENT SUMMARY

An archaeological inventory survey was conducted for the Kilohana Girl Scout Camp at TMK: (3) 4-4-015:005 in Ka'ohe Mauka Ahupua'a, Hāmākua District on the island of Hawai'i, in anticipation of wastewater improvements for the camp. The archaeological work included a pedestrian survey that covered 100% of the project area, as well as test excavations consisting of four trenches. Subsurface testing yielded no archaeological resources. Stratigraphy consisted a natural deposit above bedrock. Pedestrian survey identified a historic fire ring, State Inventory of Historic Places (SIHP) 50-10-21-30631, although construction will not take place near the site. Because of the lack of subsurface findings and determination of no effect on SIHP 50-10-21-30631, archaeological monitoring is not recommended.

CONTENTS

MANAGEMENT SUMMARY	i
FIGURES.....	iv
TABLES.....	iv
INTRODUCTION	1
Project Location and Description	1
Physical Environment	6
BACKGROUND	8
Ka'ohē Mauka in the Pre-Contact Era	8
Subsistence and Traditional Land Use	10
Mo'olelo	11
Oli and Mele	11
Ka'ohē Mauka In The Historic Era	12
Historic Land Use	14
Cattle Ranchers and Bullock Hunters, and Whalers	15
Sandalwood Traders	15
Missionaries.....	15
Ka'ohē Mauka and the Changes in Land Tenure	16
The Sugar Industry and Its Effects	17
Historic Maps	17
Contemporary History.....	19
Previous Archaeology	19
Summary of Background Research.....	22
Anticipated Finds and Research Questions	22
METHODS	23
RESULTS	25
Community Consultation	25
Pedestrian Survey.....	25
Subsurface Testing	25
Summary of Findings	28
CONCLUSION AND RECOMMENDATIONS	33
Significance Determinations	33
REFERENCES.....	34
GLOSSARY	37
APPENDIX: HISTORIC ARCHITECTURE RECONNAISSANCE-LEVEL SURVEY, CAMP KILOHANA.....	38

FIGURES

Figure 1. Project area on Ahumoa Point and Keamuku Point quadrangle maps.....	2
Figure 2. Project area (in red) on a portion of TMK plat (3) 4-4-015.	3
Figure 3. Map of Camp Kilohana, not to scale.....	4
Figure 4. Existing site and utility plan (courtesy of G70).	5
Figure 5. Soils in the vicinity of the project area.....	7
Figure 6. Ahupua'a in the vicinity of the project area.....	9
Figure 7. Portion of a historic map showing the project area vicinity (Lyons 1891).	18
Figure 8. Previous archaeological studies in the vicinity of the project area	20
Figure 9. Wide shot of the camp, showing vegetation. Orientation is to the north.	23
Figure 10. Excavation of TR 3 with mini excavator. Orientation is to the north.	24
Figure 11. Location of Site 50-10-21-30631 on a 1992 Ahumoa Point quadrangle map.....	26
Figure 12. Fire ring, SIHP 50-10-21-30631, facing northeast.....	27
Figure 13. Fire ring, SIHP 50-10-21-30631, facing northwest.....	27
Figure 14. Plan view drawing of the fire ring, SIHP 50-10-21-30631.	28
Figure 15. Location of trenches on aerial imagery.....	29
Figure 16. TR 1 north face profile drawing.....	30
Figure 17. TR 1 north face photo.	30
Figure 18. TR 2 north face profile drawing.....	31
Figure 19. TR 2 north face photo.	31
Figure 20. TR 3 north face profile drawing.....	31
Figure 21. TR 3 north face photo.	32
Figure 22. TR 4 north face profile drawing.....	32
Figure 23. TR 4 north face photo.	32

TABLES

Table 1. Previous Archaeological Studies Near the Project Area	21
Table 2. Sediment Descriptions.....	30
Table 3. Significance Determination	33

INTRODUCTION

At the request of G70, on behalf of Girl Scouts of Hawai'i, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for Camp Kilohana at TMK: (3) 4-4-015:005 in Ka'ohē Mauka Ahupua'a, Hāmākua District on the island of Hawai'i. Girl Scouts of Hawai'i is planning wastewater improvements for the camp.

In September 2016, the SHPD advised GSH that an archaeological inventory survey (AIS) would be necessary in support of proposed improvements to Girl Scout Camps statewide (Log No. 201601961, Doc. No. 1609GC02). The Girl Scouts Council of the Pacific, a private landowner, is seeking a Grant-in-Aid from the Hawaii State Legislature for this project. No federal permitting or funding is required. The project proponent is the State of Hawaii Department of Land and Natural Resources (DLNR) Division of State Parks (State Parks). The AIS was designed to identify any historic properties that may occur in the area. This report meets the requirements and standards of state historic preservation law, specifically Chapter 6E of the Hawai'i Revised Statutes (HRS), and the State Historic Preservation Division's (SHPD's) *Rules Governing Standards for Archaeological Inventory Surveys and Reports* (Hawaii Administrative Rules [HAR] §13-276).

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. The next section presents methods used in the fieldwork, followed by the results of the archaeological inventory survey. Project results are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary at the end of the document.

Project Location and Description

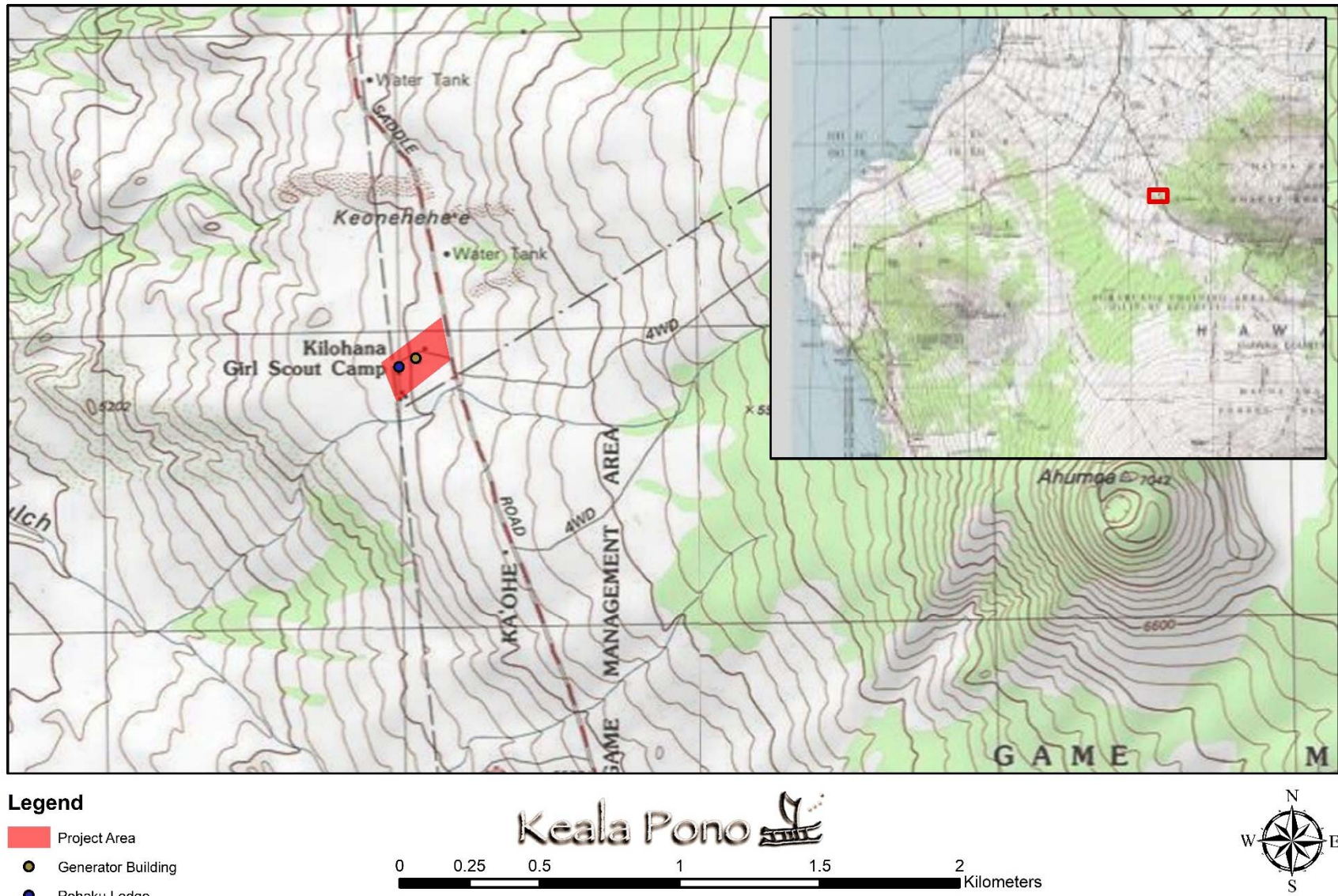
The project area consists of 2.782 ha (6.875 ac.) in Ka'ohē Mauka Ahupua'a, Hāmākua District on the island of Hawai'i (Figure 1). This is at TMK: (3) 4-4-015:005, owned by the Girl Scout Council of the Pacific (Figure 2). The entire 2.782 ha (6.875 ac.) parcel is the project area; although there are no plans now, eventually additional work on the property may be needed in addition to the wastewater system. This is located on the western flank of Mauna Kea, west of the Ka'ohē Game Management Area, and north of the Pohakuloa Game Management Area. According to some reports, the project is located in the Hawai'i Island district of South Kohala, but according to other sources, the project is located in the ahupua'a of Ka'ohē Mauka in the district of Hāmākua. For this report, the project site is ascribed to the latter, that is, the ahupua'a of Ka'ohē Mauka in the district of Hāmākua, as indicated by State of Hawai'i GIS data for ahupua'a and district boundaries.

The project area is bounded by Saddle Road to the east, and undeveloped land on all other sides. The west boundary of the parcel is also the South Kohala/Hāmākua district boundary line. Camp Kilohana currently consists of Pohaku Lodge (a former military building that is now a lodge and storage facility), the Generator Building, a water tank, a storage area, a fire ring, two pavilions, several outhouses, and three large cement slabs (Figures 3 and 4).

The Girl Scouts of Hawai'i website describes Camp Kilohana as follows:

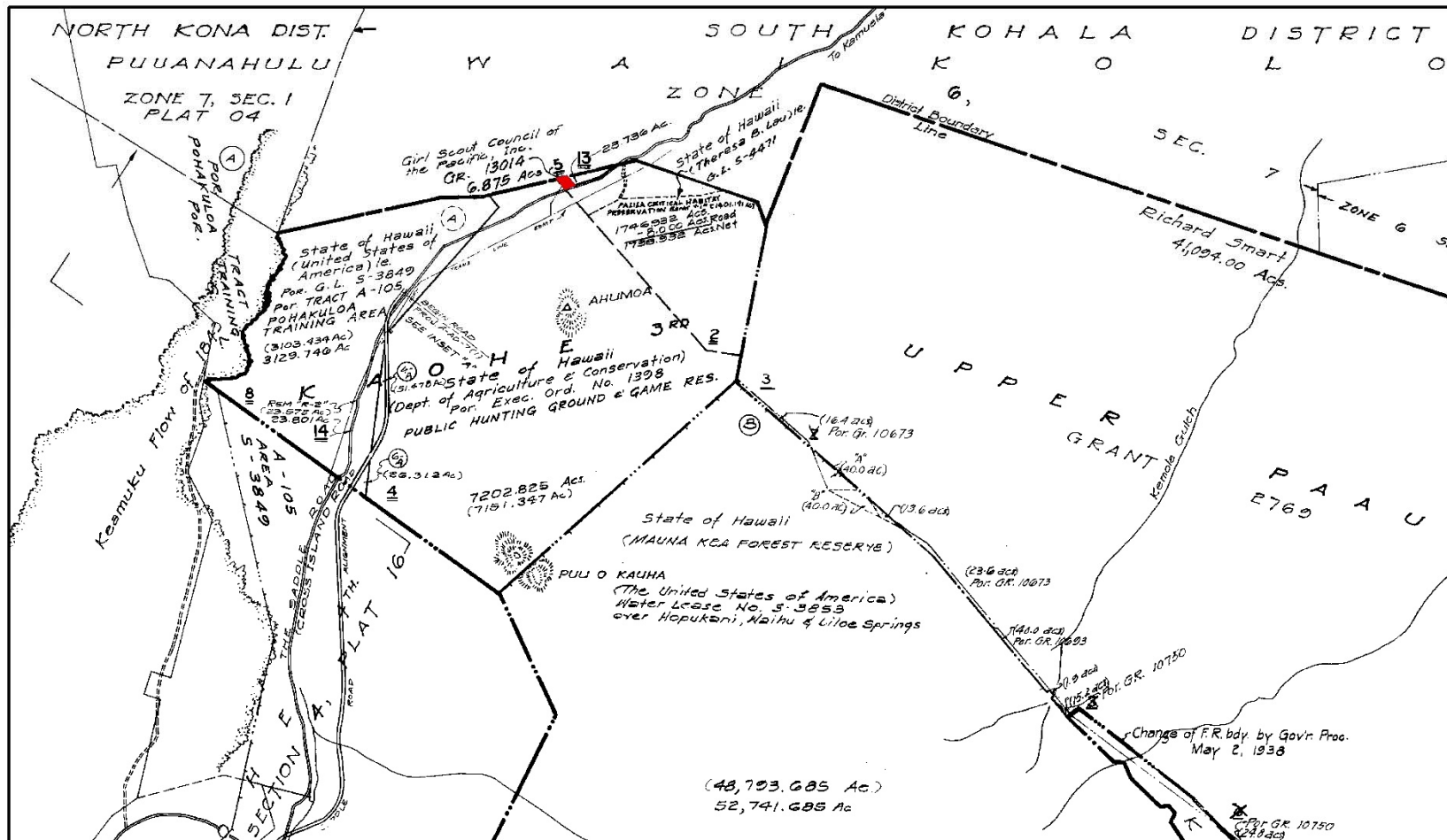
Located on Saddle Road, 10 miles from the Waimea side junction, and 44 miles from Hilo, this 6.83-acre camp is the best site for meetings, retreats, stargazing, or just studying nature. Nearby points of interest include the Nene Goose Sanctuary, Onizuka Center of Astronomy located on Mauna Kea and Mauna Loa Observatory. At an elevation of 6,000 feet, this site experiences a variety of weather conditions. Kilohana is perhaps the most rustic of all our Girl Scout camps. The only water comes from a catchment tank adjacent to the main lodge and it is not meant for drinking; there is no electricity, but users are encouraged to bring generators; and some rental car companies do not allow their vehicles on the road into camp. Camp Kilohana can comfortably accommodate 80 people. (Girl Scouts of Hawai'i 2016)

The proposed improvements for Camp Kilohana are to abandon the existing Large Capacity Cesspools (LCC) and construct an onsite wastewater treatment system. Abandoning the LCC would be in accordance with Hawai'i



Layer Credits:USGS Topographical Ahumoa Point Quadrangle Map 1992 / Keamuku Point Quadrangle Map 1993

Figure 1. Project area on Ahumoa Point and Keamuku Point (USGS 1992 and 1993) quadrangle maps.



Legend

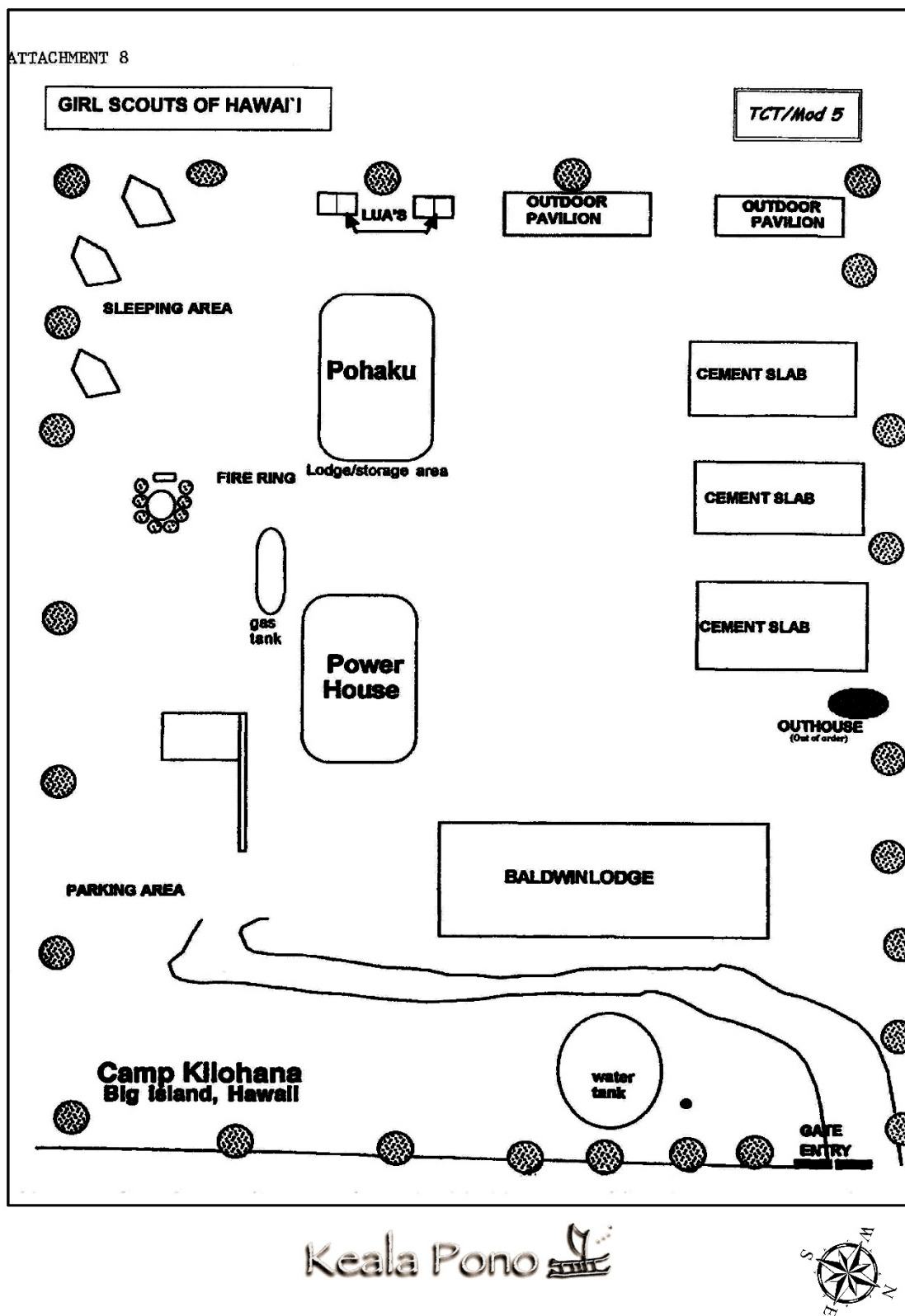
Project Area

Keala Pono

0 1 2 4 6 8 10 Kilometers

Layer Credits: Portion of TMK (3) 4-4-15

Figure 2. Project area (in red) on a portion of TMK plat (3) 4-4-015.



Layer Credits: Map of Camp Kilohana (courtesy of Girl Scouts of Hawai'i) not to scale.

Figure 3. Map of Camp Kilohana, not to scale (courtesy of Girl Scouts of Hawai'i; date of map unknown).

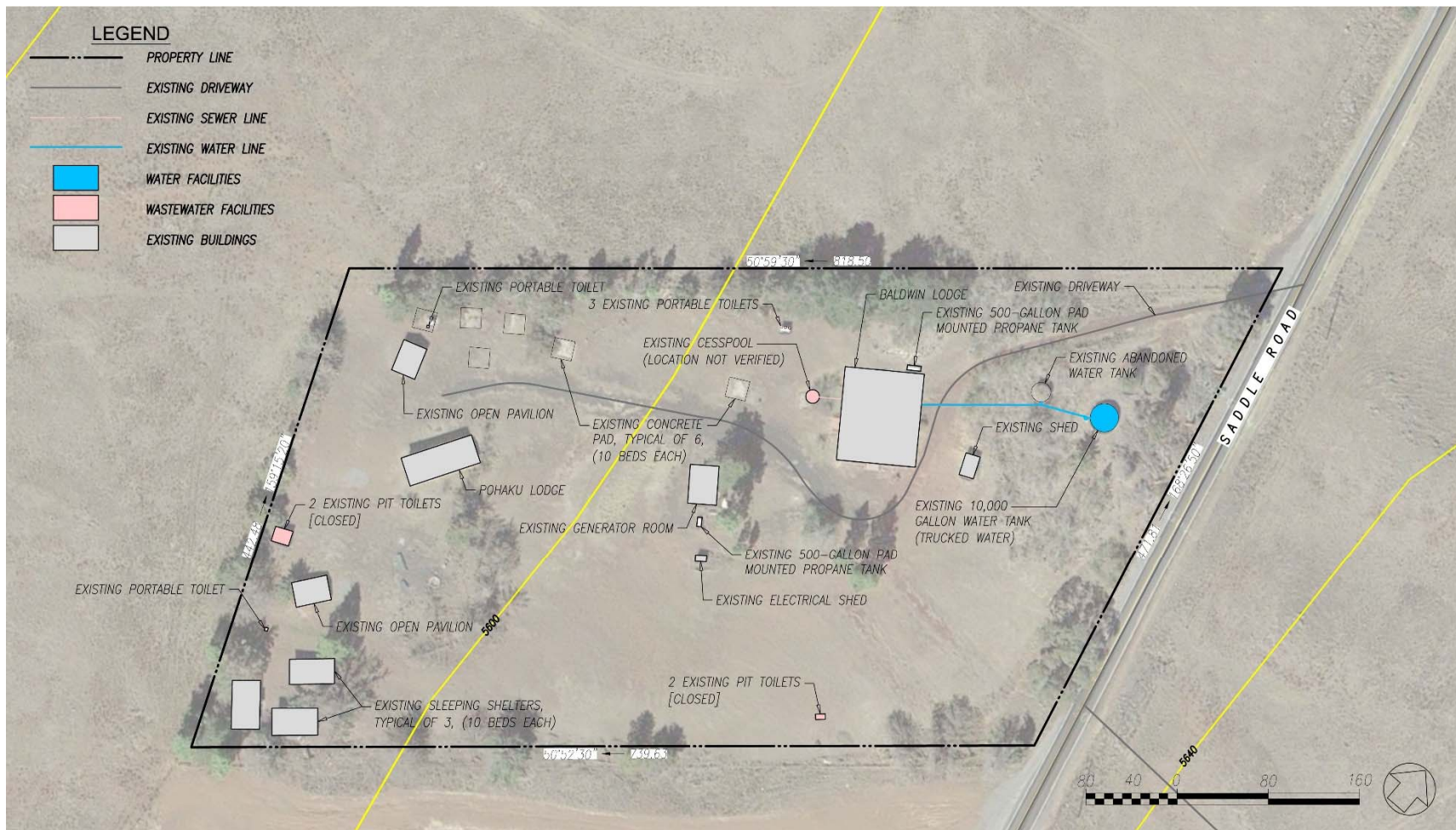


Figure 4. Existing site and utility plan (courtesy of G70, 2016).

Administrative Rules (HAR) §11-23. An individual wastewater system is proposed to replace the existing cesspool that services Baldwin Lodge. These improvements will be limited to a roughly 60 x 15 m (200 x 50 ft.) area just northwest of the building. Baldwin Lodge was built in 1976 and is not a historic property. The large building consists of three main rooms, two bathrooms with flush toilets, a complete kitchen, and a large masonry fireplace.

Physical Environment

The project area lies in the former pili grasslands of Ke‘āmuku which later became utilized by the Parker Ranch for their cattle station (Escott and Keris 2009). The region was once vegetated with māmane and naio, although these are mostly gone today (Cuddihy and Stone 1990). This is a very dry region, with rainfall at the nearby Waiki‘i rain gauge recorded at only 63 cm (25 in.) annually (Giambelluca et al. 2013). The closest watercourse is a non-perennial stream that runs through ‘Auwaiakēkua Gulch, approximately 50 m (164 ft.) to the south of the southern project boundary. Camp Kilohana is situated in the montane altitudinal zone on an ancient Mauna Kea lava flow with 7 to 20% slopes noted in the area (Wolfe and Morris 1996). The project area itself is mostly gradually sloping. It is located at an elevation of approximately 1,700 m (5,600 ft.) and lies roughly 30 km (19 mi.) from the coast at ‘Anaeho‘omalu.

Soils in the project area are classified as Kilohana loamy fine sand, 12 to 20% slopes (KZD) (Figure 5). The Kilohana series of soils are described as follows:

...somewhat excessively drained loamy fine sands that formed in volcanic ash, sand and cinders... Their soil temperature is between 50° and 53° F [and] their natural vegetation consists of brome fescue, orchardgrass, hardstem lovegrass, and mamane... Permeability is rapid, runoff is slow, and the erosion hazard is slight... This soil is used for pasture, wildlife habitat, and recreation areas. (Sato et al. 1973:31)

The Kilohana loamy fine sand is further classified as “Capability subclass VIe, nonirrigated; pasture group 14; woodland group 14” (Sato et al. 1973:31). “Capability subclass VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife” (Sato et al. 1973:55).

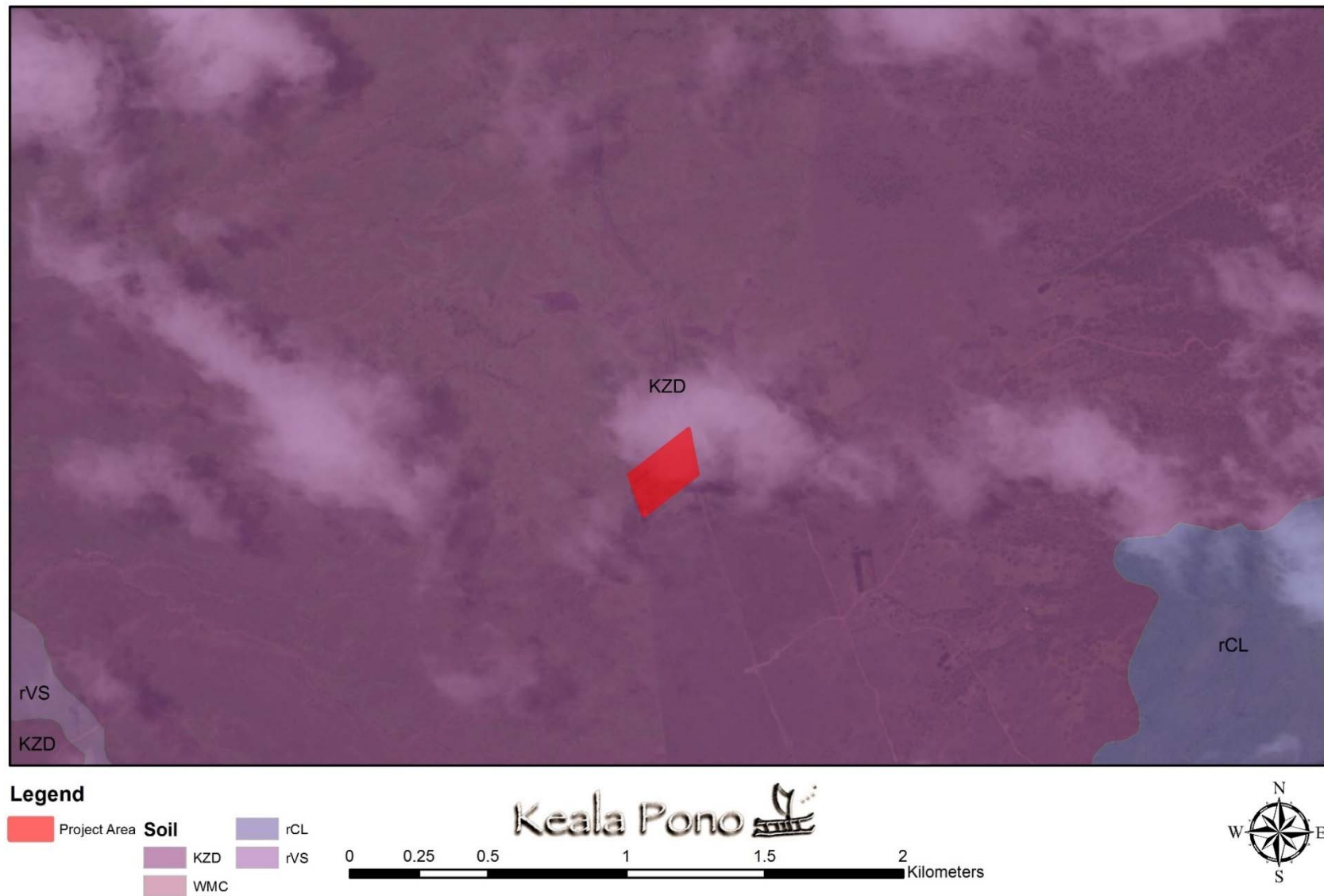


Figure 5. Soils in the vicinity of the project area (data from Sato et al. 1973). The project area is entirely within KZD, Kilohana loamy fine sand, 12–20% slopes. Nearby are rVS (Very stony land) and rCL (Cinder land).

BACKGROUND

A brief historic review of Ka'ohē Mauka is provided below, to offer a better holistic understanding of the use and occupation of the project area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., mo'olelo, 'ōlelo no'eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai'i State Library, the University of Hawai'i at Mānoa libraries, the SHPD library, and online on the Office of Hawaiian Affairs website and the Waihona Aina, Huapala, and Ulukau databases. Archaeological reports and historical reference books were among the materials examined.

Ka'ohē Mauka in the Pre-Contact Era

Native Hawaiian traditions place the origin of both man and the physical environment in the context of kinship and genealogical accounts (Maly and Maly 2003). The history of Ka'ohē Mauka begins with the history of Hawai'i Island:

Hawai'i was another child of Papa and Wākea, their first-born child. He was the brother of Ho'ohoku-kalani. Hawai'i became the ancestor of the people of Hawai'i; the ancient name of Hawai'i island was Lono-nui-ākea. (Kamakau 1991:129)

Traditionally, Hawai'i Island is divided into six districts, one of which is Hāmākua. Although Hāmākua is located on the northeast of the island, its area extends west across the summit of Mauna Kea and crosses the center of the island to the slopes of Mauna Loa (Cordy 1994). This interior portion of Hāmākua with its higher elevations, is where the sub-district or ahupua'a of Ka'ohē Mauka, literally, "Upland Ka'ohē," is located. The project area is entirely within Ka'ohē Mauka but it borders Waikōloa Ahupua'a (Figure 6). Cordy lightly explains the subdividing of Hāmākua into smaller land units and highlights that Ka'ohē [Mauka] was the sole sub-district which encompassed the summit of Mauna Kea and the saddle region between Mauna Kea and Mauna Loa:

Sources indicate that there were about 100 ahupua'a (community) land units in Hāmākua at European contact. Seven were in West Hāmākua, while the rest were in East Hāmākua... There were two very large ahupua'a in East Hāmākua --- Pā'auhau and Ka'ohē. Both had narrow lands from the sea into the 'ōhi'a forest... Ka'ohē was immense, engulfing all the other inland areas of Hāmākua --- including the rest of Mauna Kea's upper slopes [that which was not part of Pā'auhau] and its summit and all of the Interior Plateau... Both Pā'auhau and Ka'ohē contained large areas of open māmane forest lands, and Ka'ohē also encompassed Mauna Kea's upper slopes with its basalt resources for adzes, and included the petrel and nene nesting grounds on the Inland Plateau. (Cordy 1994:12)

Much of the oral accounts which narrate the events from the first peopling of Hawai'i to the period of written documentation has been lost in time. However, one often overlooked source of traditional history is the information embedded in the Hawaiian landscape. Hawaiian place names "usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated... The place names provide a living and largely intelligible history" (Pukui et al. 1974:xii). The place names associated with the project area hint at its natural environment:

Hāmākua. District... northeast Hawai'i. Poetic (Hawai'i): kuhu loa, long corner.

Ka'ohē. Land section... Lit., the bamboo.

Ke'āmuku. Lava flow... Lit., cut-off lava. Another explanation is that women, children, and the aged hid in caves here during wars; they had to stifle any burning ('ā muku) fire if an enemy appeared.

Mauna Kea. Highest mountain in Hawai'i (13,796 feet)... Lit. white mountain (often the mountain is snowcapped). (Pukui et al. 1974: 39,85,86,102,103,148,149)

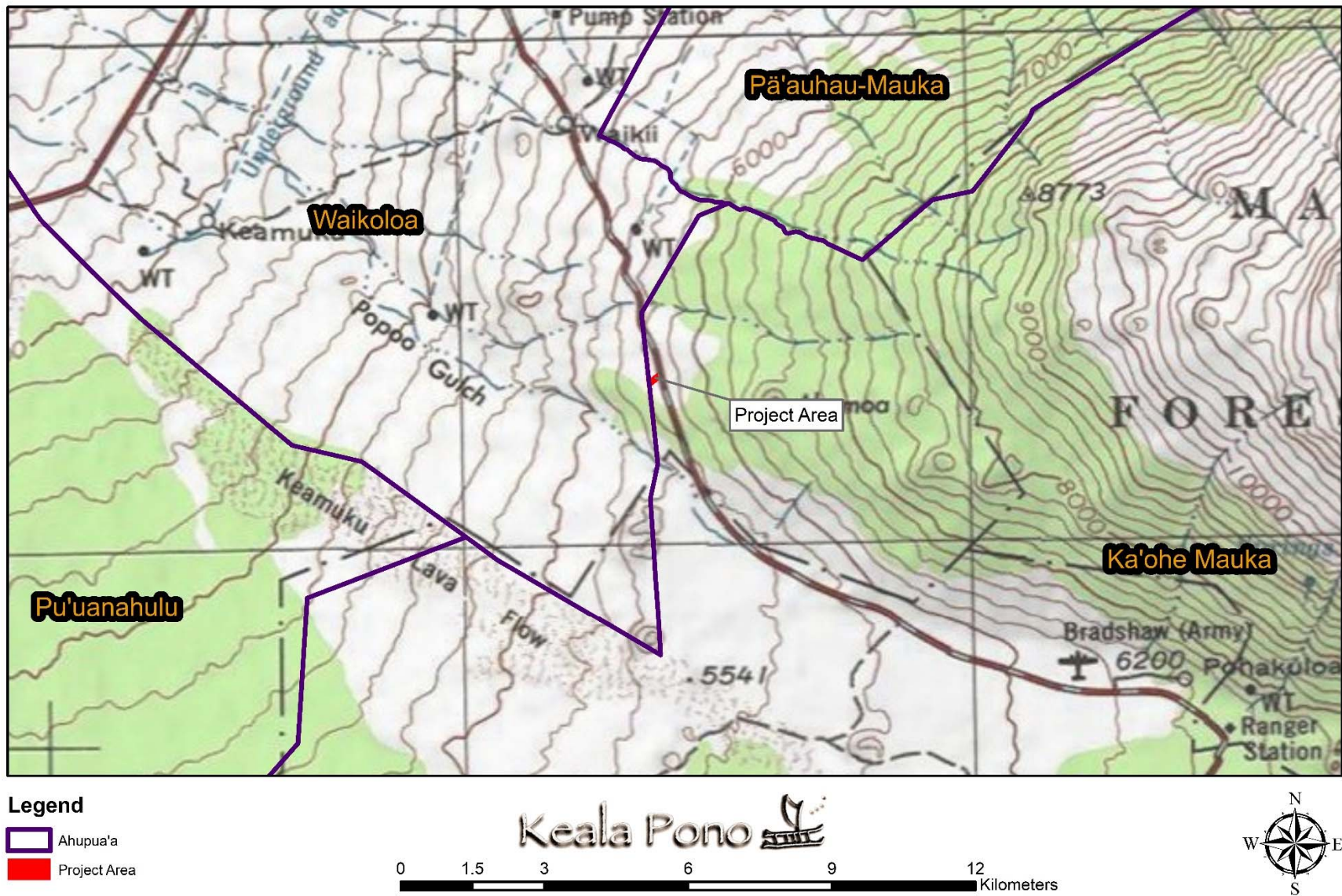


Figure 6. Ahupua'a in the vicinity of the project area (USGS 1992 Ahumoa Point Quadrangle and 1993 Keamuku Point Quadrangle).

Subsistence and Traditional Land Use

On the island of Hawai‘i, some of the earliest settlements appear along the Hāmākua coast (Escott and Keris 2009), an ideal place to settle due to the great supply of fresh water and marine resources there. These earliest habitation sites were concentrated near the shore but also went up the lower slopes of Hāmākua. Although the residents had an abundance of life’s necessities at their doorstep throughout the lower elevations, they eventually discovered the unique resources that the higher elevations offered. Thus, they trekked to the uplands of Ka‘ohe Mauka to procure the resources from the interior lands. Cordy categorizes these interior uplands of Ka‘ohe into two zones, the māmane forest zone and the treeless scrub-vegetation alpine zone:

Archival data on traditional land use patterns for this subregion of Hāmākua are quite sparse. This area again was above the ‘ōhi‘a-koa forest and included two vegetation zones: the open māmane forests and scrub, alpine tundra vegetation at higher elevations above treeline... The Boundary Commission records clearly indicate that most ahupua‘a ended at the ‘ōhi‘a-koa forest borders, while a very few extended into the māmane zone... Pā‘auhau and Ka‘ohe encompassed vast areas of the māmane forest, and Ka‘ohe included the higher areas above the tree-line. It is important to repeat, however, that the archival records show that the houses, major heiau and farmlands of these and the other East Hāmākua ahupua‘a were on the lower slopes below the ‘ōhi‘a forest --- in the Mauna Kea windward Slopes subregion... Ka‘ohe’s southern borders which lay within this subregion, ran primarily along a series of cinder cones. (Cordy 1994:86)

According to archival records, the māmane zone provided valuable hardwood, such as its namesake, the māmane wood; prized birds for eating, such as the nēnē and the ‘ua‘u; and this zone also provided pili grass, sought after for thatching:

Special resources within the māmane zone are implied in the [Boundary Commission] records... Resource use rights would appear likely for the few ahupua‘a in Hāmākua which entered the māmane forest and cut-off the others at the ‘ōhi‘a-koa woods. Unfortunately, these resources are not clearly specified. “Pili grass” [one such specified resource] may have been a generic term for grass, but it may have been a special resource for thatching certain structures. Māmane, itself, was important, being preferred for adze handles and also being used for house posts and holua sleds. Meat birds --- the nēnē goose and the ‘u‘au or dark-rumped petrel (*Pterodroma phaeopygia*) --- may have been special resources found in these māmane forests. The nestling petrels evidently were a delicacy restricted to chiefs, with the other age ranges available for all ranks to eat... So “hardwoods and birds” may have been the major resources of the lower parts of this subregion. Other resources of the māmane zone are unclear. (Cordy 1994:86)

Above the māmane zone, the treeless alpine zone of Ka‘ohe Mauka provided an important natural resource in the dense volcanic stone found near the summit of Mauna Kea. This summit area was traditionally quarried for the manufacture of adzes and other stone implements. In addition, the summit was a place of unique spiritual importance:

The lands above the māmane treeline belonged to Ka‘ohe alone at European contact. Myths, although few are recorded, reveal that this zone was sometimes associated with Poli‘ahu, a goddess associated with this snow-covered mountain and an occasional rival of Pele. And indeed, with cold, fog, and snow being common and impressive natural phenomena in contrast to the otherwise semi-tropical Hawai‘i Island, it is quite logical that many place spirits of importance would be associated with the area. The only traditional land use clearly documented historically for this area is the quarrying of stone for adzes. Although stone adzes were rapidly replaced by metal after European contact, elderly people were aware of adze quarrying on Mauna Kea... It is suggested that this knowledge from the prior generation or two indicates quarry use could have lasted to between the 1770s-1840s. Further specifics are lacking in this archival material. (Cordy 1994:88)

Besides hardwood forests, bird-hunting grounds, stone quarries, and ceremonial shrines to the deities, two other land uses within Ka‘ohe Mauka were significant and should be pointed out. One land use was its place chosen

for burials among and above the district's cinder cones. The other land use was its important cross-island trail system. Most notable was the trail system which traversed Ka'ohē Mauka's interior plateau, an ancient forerunner of today's Saddle Road (Cordy 1994).

Mo'olelo

As mentioned earlier, Hawaiian place names were connected to traditional stories through which the history of the places was preserved. These stories were referred to as "mo'olelo, a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or prosaic. Mo'olelo were repositories of cultural insight and a foundation for understanding history and origins, often presented as allegories to interpret or illuminate contemporary life... Certainly many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language" (Nogelmeier 2006:429, 430). Perhaps at one time there were many mo'olelo associated with Ka'ohē Mauka, but compared to other districts around Hawai'i Island, very few mo'olelo about Ka'ohē Mauka exist today. The key mo'olelo concern the legendary chief 'Umi and later, his son Keawe, both of whom were known to have used the Ka'ohē Mauka trails. Chief 'Umi used the trails of Ka'ohē Mauka's interior plateau to meet the Kona chiefs in battle:

Umi went by way of the mountains to stir up fight with I-mai-ka-lani and the chiefs of Kona. He became famous as a chief who traveled through the mountains of Hawaii, and [its trails] became the routes by which he went to war. (Kamakau 1992:18)

While there in the saddle region, 'Umi is credited to having overseen the building of the heiau at Pu'u Ke'cke'e. A generation later, 'Umi's son, the famed Chief Keawe of Hawai'i Island, traveled the same Ka'ohē Mauka area to battle his older brother Keli'iokaloa:

Therefore he made himself ready with his chiefs, war lords, war leaders, and warriors from Hilo, Puna, and Ka-'u to make war on Kona. The war parties [met?] at the volcano (pit of Pele) before going on to battle along the southern side of Mauna Kea and the northern side of Mauna Loa. The mountain road lay stretched on the level. At the north flank of Hualalai, before the highway, was a very wide, rough bed of lava—barren, waterless, and a desert of rocks. It was a mountain place familiar to 'Umi-a-Liloa when he battled against the chiefs of Hilo, Ka-'u, and Kona. There on the extensive stretch of lava stood the mound (ahu), the road, the house, and heiau of 'Umi. It was through there that Keawe-nui-a-'Umi's army went to do battle against his older brother, Ke-li'i-o-kaloa. (Kamakau 1992:35)

Oli and Mele

The noteworthiness of specific locales in Hawaiian culture is further bolstered by their appearances in traditional chants. An oli refers to a chant that is done without any accompaniment of dance, while a mele refers to a chant that may or may not be accompanied by a dance. These expressions of folklore have not lost their merit in today's society. They continue to be referred to in contemporary discussions of Hawaiian history, identity and values.

When compared to other districts around Hawai'i Island, Ka'ohē Mauka is not often mentioned by name in oli and mele. This is similar to the scant amount of mo'olelo about the ahupua'a noted earlier. In addition there are no 'ōlelo no'eau about Ka'ohē Mauka listed in Pukui's (1983) lengthy compilation of traditional Hawaiian proverbs and wise sayings. One would imagine that there were more mele, oli, and 'ōlelo no'eau associated with Ka'ohē Mauka in the old days that perhaps have been lost through time. Then again, Ka'ohē Mauka was not an ahupua'a with a sizeable permanent village like the other districts, and perhaps this is why there are relatively fewer oral traditions associated with this district.

One chant rooted in Ka'ohē Mauka has been shared recently by the Kanaka'ole family in their work for the Saddle Road Environmental Impact Statement. This is a birth chant which honors King Kamehameha III while at the same time, paying homage to Mauna Kea. One might expect that if any chant from Ka'ohē Mauka has stood the test of time, it would be one which underscores the sacredness of that tallest mountain of the

archipelago. A mele hanau (birth chant) for Kauikeaouli (Kamehameha III) describes Mauna Kea in this genealogical context [as a first-born child of Hawai'i Island]:

O hanau ka mauna a Kea
'Opu'u a'e ka mauna a Kea
'O Wakea ke kāne, 'o Papa
'o Walinu'u ka wahine.
Hanau Ho'ohoku, he wahine
Hanau Haloa, he ali'i,
Hanau ka mauna,
He keiki mauna na Kea...
Born of Kea was the mountain
The mountain of Kea budded forth
Wakea was the husband, Papa
Walinu'u was the wife
Born was Ho'ohoku, a daughter
Born was Haloa, a chief
Born was the mountain,
A mountain-son of Kea. (Kanahele and Kanahele 1997)

Ka'ohē Mauka In The Historic Era

Ka'ohē Mauka, being on the island of Hawai'i, witnessed multiple changes in its political rule in the years just prior to Western contact. In the early 18th century, Chief Alapa'i ruled the entire island of Hawai'i. But due to internal strife, it became divided with Alapa'i ruling the northern part of the island and Kalani'ōpu'u ruling the southern districts of Ka'ū and Puna. In 1754, Alapa'i died, and his son Keawe'ōpala inherited the governance of Alapa'i's lands. However, later that same year, Kalani'ōpu'u wrested control of Keawe'ōpala's lands, and because of that, Kalani'ōpu'u became the ruler of the entire island. When Kalani'ōpu'u died in 1782, the governance of Hawai'i went to his son Kīwala'ō. However, it was not long before Kīwala'ō's rule was challenged by Kamehameha, the son of Kalani'ōpu'u's brother. In a subsequent battle between Kīwala'ō's and Kamehameha's forces, Kīwala'ō was killed, and Kamehameha took his place. Following that decisive battle, the governance of Hawai'i Island was divided into three parts. Kamehameha ruled the north half of the island from Hāmākua to Kohala to Kona. Keawema'uhili, the brother of the deceased Chief Kalani'ōpu'u, ruled out of Hilo, and Keōuakū'ahu'ula, a son of Kalani'ōpu'u, ruled the districts of Ka'ū and Puna. Eventually, Keawema'uhili was killed by Keōuakū'ahu'ula's forces, and then Keōuakū'ahu'ula was defeated by Kamehameha's army. After that, Kamehameha had complete rule over the entire island, and from there he went on to conquer the rest of the Hawaiian Islands. The following excerpts of this dynamic time in Hawaiian history are from Kamakau (1996 [1866]) and translated by Keala Pono archival researcher, Dietrix Duhaylonsod:

Ho'i akula 'o Alapa'i i Hawai'i i ke kaua, a ua lanakila 'o Alapa'i ma luna o nā ali'i o Hawai'i, a ua luku 'ia nā ali'i o Hawai'i, a ua hui 'ia i ho'okahi aupuni ma lalo o Alapa'i (Kamakau 1996 [1866]:1).

Alapa'i returned to Hawai'i Island to do battle, and Alapa'i emerged victorious over the chiefs of Hawai'i Island, the chiefs were slaughtered, and the entire kingdom was gathered as one under Alapa'i.

I ke kaua 'ana i Mahinaakāka ke kū ka'awale 'ana o Kalani'ōpu'u e noho mō'i no Ka'ū me Puna, no ka mea, he ali'i kama'āina 'o Kalani'ōpu'u no Ka'ū, a 'o kona one hānau ia o kona mau mākuā. Ho'i maila 'o Alapa'i a noho ma Hilo, a hala ka makahiki, ho'i maila 'o ia a noho ma Waipi'o. A pau kona noho 'ana ma Waipi'o. Ho'i maila 'o Alapa'i me nā ali'i a hiki ma Waimea, a 'o kekahi po'e, ma kai o ka 'au wa'a, a pae i Kawaihae. Ho'i akula 'o Alapa'i mai Waimea aku a Lanimaomao, loa'a ihola i ka ma'i...

Ma Kikiako'i, make ihola 'o Alapa'i. I ka A.D. 1754, noho ali'i ihola 'o Keawe'ōpala no ke aupuni o Hawai'i (Kamakau 1996 [1866]:13).

From the battle at Mahinaakāka, Kalani'ōpu'u emerged as the king of Ka'ū and Puna, because Kalani'ōpu'u was a native chief of Ka'ū, and it was the birthplace of his parents. Alapa'i returned to Hilo, and after some time, he went to live at Waipi'o. After living at Waipi'o, Alapa'i and his chiefs went to Waimea, and others, by way of canoes, landed at Kawaihae. Alapa'i went from Waimea to Lanimaomao, he became ill... At Kikiako'i, Alapa'i died. In the year 1754, Keawe'ōpala (the son of Alapa'i) became the ruler of Hawai'i.

‘Ōlelo aku ke kahuna ma hope o Kalai'ōpu'u [another name for Kalani'ōpu'u], 'o Holo'ae ka inoa, [“]Eia ka mea e make ai 'o Keawe'ōpala, aia a make 'ē ke kahuna ma mua o Keawe'ōpala, a laila, lilo ke aupuni iā 'oe, no ka mea, 'o ke kahuna ka mea e pa'a ai ke aupuni iā Keawe'ōpala.[“]... ua hopu 'ia ke kahuna o Keawe'ōpala, ua pepehi 'ia a kālua 'ia e Kalani'ōpu'u me ka ho'omāinoio 'ia... I ka makahiki A.D. 1754, ua lilo holo'oko'a ke aupuni o Hawai'i iā Kalani'ōpu'u (Kamakau 1996 [1866]:13, 14).

The kahuna under Kalai'ōpu'u, whose name was Holo'ae, spoke, “Here is the way Keawe'ōpala will die, first his priest must die, and then, the kingdom will go to you, because it is the priest who keeps the kingdom securely under Keawe'ōpala's rule... the priest of Keawe'ōpala was captured, and he was tortured, killed and burned in the pit by Kalani'ōpu'u... In the year 1754, the entire kingdom of Hawai'i went under the rule of Kalani'ōpu'u.

I ka pau 'ana o ka wā hī 'ahi o Kalae, mana'o ihola 'o Kalani'ōpu'u e ho'i i Kona, akā, ua loa'a 'ē 'o ia i ka ma'i, no laila, ho'i maila 'o ia a noho ma Ka'iliki'i i Waio'ahukini ma Pākini; māhuahua loa ka ma'i, a make nō ma laila. I ka iwakāluakumamāiwa makahiki [ia] o kona noho ali'i 'ana ma luna o ke aupuni o Hawai'i. A 'o nā makahiki a pau o kona ola 'ana, he kanahikukumamāiwa, a make ihola 'o ia i ka malama 'o Ianuari, i ka A.D. 1782 (Kamakau 1996 [1866]:62).

When he was finished trolling for 'ahi at Kalae, Kalani'ōpu'u decided to return to Kona, but he became sick, and therefore, he went to stay at Ka'iliki'i in Waio'ahukini at Pākini; the illness intensified, and he died there. His reign over the kingdom of Hawai'i lasted twenty-nine years. And he lived for seventy-nine years, and died in the month of January, 1782.

I ka noho 'ana o Kalani'ōpu'u ma Kohala, ua ho'oholo ihola nā ali'i a me nā kuhina, e kauoha 'ia ke keiki ho'oilina o ke aupuni (Kalanikauikeaoulīkīwala'ō)... Aia a make 'o Kalani'ōpu'u, a laila, e ili aku ke aupuni i ka ho'oilina (Kamakau 1996 [1866]:59, 60).

When Kalani'ōpu'u was staying at Kohala, the chiefs and the cabinet members decided, and the command would be given that the child Kīwala'ō would be the next heir to the kingdom... Kalani'ōpu'u died, and then, the heir inherited the kingdom.

I ko Kamehameha mā hiki 'ana mai ma hope, ua ho'omaka mua aku 'o Ke'eaumoku i ke kaua i ko Kīwala'ō mau koa... A 'ike akula 'o Ke'eaumoku iā Kīwala'ō e huli ana i lalo, kokolo akula 'o ia me ka leiomano ma ka lima, a papa'i a'ela ma ko Kīwala'ō kani'ā'i, a make loa ihola ia... 'O ke 'auhe'e ihola nō ia o nā ali'i a me nā koa o Kīwala'ō. 'O Keōuakū'ahu'ula ho'i a me kekahi po'e ali'i... holo akula i Ka'ū, a lilo ihola 'o Keōuakū'ahu'ula i mō'i no Ka'ū a me Puna... 'O Keawema'uhili nō ho'i ke ali'i kapu i ke au o Alapa'inui... a hele akula a hiki i Hilo, a lilo ihola 'o ia i ali'i no kekahi hapa o Hilo, a me kekahi hapa ho'i o Puna, a pēlā nō ho'i 'o Hāmākua... Lilo ihola 'o Kona, Kohala a me kekahi hapa o Hāmākua iā Kamehameha. Lilo ihola ka mokupuni 'o Hawai'i i mau aupuni 'ekolu, a 'ekolu nō ho'i mau mō'i (Kamakau 1996 [1866]:73, 74).

When Kamehameha arrived later, (his warrior-general) Ke'eaumoku had already started the battle with Kīwala'ō's warriors... Ke'eaumoku saw Kīwala'ō facing down, he crawled with a leiomano weapon in his hand, and struck at Kīwala'ō's throat, and Kīwala'ō died... The chiefs and the warriors of Kīwala'ō

fled. Keōuakū‘ahu‘ula and some chiefs sailed to Ka‘ū, and Keōuakū‘ahu‘ula became the king of Ka‘ū and Puna... Keawema‘uhili also, he was a sacred chief from the time of Chief Alapa‘i... Keawema‘uhili went to Hilo, and he became the chief of parts of Hilo, Puna, and Hāmākua... Kona, Kohala and a portion of Hāmākua became lands of Kamehameha. The island of Hawai‘i was divided into three kingdoms, and with three kings.

Ki‘i maila ‘o Keōuakū‘ahu‘ula e kaua iā Keawema‘uhili. Kaua ihola lāua i kinohi, a he‘e ‘o Keawema‘uhili; a kaua hou ihola ma ‘Alae, ma Hilo Palikū, ua pepehi ‘ia ‘o Keawema‘uhili, a make pū ihola kekahi ali‘i, ‘o Kāo‘o kona inoa, he kaiko‘eke nō ho‘i nona (Kamakau 1996 [1866]:105).

Keōuakū‘ahu‘ula came to do battle against Keawema‘uhili. They fought in the beginning, and Keawema‘uhili fled; and they fought again at ‘Alae, at Hilo Palikū, Keawema‘uhili was killed, together with another chief named Kāo‘o, who was a brother-in-law of his.

Ki‘i akula ‘o Keaweaeulu a me Kamanawa, nā kuhina o Kamehameha, iā Keōuakū‘ahu‘ula, ka mō‘ī o ka ‘ao‘ao hikina o ka mokupuni ‘o Hawai‘i... nīnau ihola ‘o Keōua, ‘He aha kā ‘olua huaka‘i?’ Pane a‘ela ‘o Keaweaeulu mā, ‘I ki‘i mai nei nō māua iā ‘oe, ‘o ‘oe nō ke keiki a ko māua kaikua‘ana haku; i ki‘i mai nei iā ‘oe, e holo kākou i Kona, a hui pū me kō kaikaina... E ho‘opau i ke kaua ‘ana ma waena o ‘olua... Holo akula nō lākou nei a kokoke e pili i Mailekini ma Kawaihae... Kū maila nō ho‘i ‘o Keōuakū‘ahu‘ula a kāhea mai iā Kamehameha, ‘Eia au lā.’ Kāhea mai nō ho‘i ‘o Kamehameha, ‘Kū mai, a hele mai e ‘ike kāua.’ Kū a‘ela nō ho‘i ‘o Keōuakū‘ahu‘ula me ka mana‘o e lele mai i uka; e hou mai ana ‘o Ke‘eaumoku i ka pololū... A ‘o Keōua a me kekahi po‘e ‘ē a‘e ma ko lākou wa‘a, ua pau loa lākou i ka make... I ka make ‘ana o Keōuakū‘ahu‘ula, ke keiki a Kalani‘ōpu‘u, ka mō‘ī o Hawai‘i, a kau ‘ia ‘o ia ma Pu‘ukoholā ma Kawaihae, a laila, ua holo‘oko‘a ke aupuni o ka mokupuni ‘o Hawai‘i iā Kamehameha (Kamakau 1996 [1866]:110–113).

Keaweaeulu and Kamanawa, the cabinet members of Kamehameha, went to get Keōuakū‘ahu‘ula, the king of the eastern side of Hawai‘i Island... Keōua asked, “Why have you two journeyed?” The two travelers answered, “We have come to get you, you are the child of our older brother, Chief [Kalani‘ōpu‘u]; we have come to get you that we may all sail to Kona and meet with your younger brother [cousin Kamehameha]... to put an end to the warfare between you two... They all sailed and approached close to Mailekini at Kawaihae... Keōuakū‘ahu‘ula stood and called out to Kamehameha, “Here I am.” Kamehameha called back in return, “Stand up and come, let us see.” Keōuakū‘ahu‘ula stood up with the thought of fleeing inland; (Kamehameha’s warrior uncle) Ke‘eaumoku threw his spear... Keōua and the other people on that canoe, they all died... At the death of Keōuakū‘ahu‘ula, who was the child of Kalani‘ōpu‘u, the former king of Hawai‘i, Keōuakū‘ahu‘ula was placed on the sacrificial heiau of Pu‘ukoholā at Kawaihae, and then, the entire kingdom of Hawai‘i Island became under the one rule of Kamehameha.

Prior to Kamehameha’s reign, in 1778 during the reign of Chief Kalani‘ōpu‘u, the British Captain James Cook arrived in the Hawaiian Islands. He is credited as being the first Westerner to do so (Kamakau 1996 [1866]). An estimated 105,000 natives were living throughout the islands at the time (Bergin 2004). With no clear census, it is not known how many people resided in the Hāmākua district just before the westerners arrived, but “after European contact, a rapid decline in Hāmākua’s population occurred... [and] a low [population] of 1,516 was reached in 1872” (Cordy 1994:10). It is estimated that the entire population of Ka‘ohe numbered 598 individuals at the time of contact, and that was greatly reduced to 139 individuals by 1849 (Cordy 1994:10).

Historic Land Use

Hāmākua’s downturn, and by extension, Ka‘ohe Mauka’s as well, from its preeminent political and religious past was largely compounded by the fact that the district had no major port for the ships of the westerners. Natives all over the island were leaving their homes for the major port towns (Cordy 1994). The foreigners brought with them tremendous changes --- cultural and political changes, and changes to the traditional economy and also to the physical landscape throughout. In particular, the arrival of early missionaries, cattle ranchers,

bullock hunters, sandalwood traders, whalers, agricultural businessmen, and later, the American military, all contributed, directly or indirectly, to the changes in historic land use in Ka‘ohe Mauka.

Cattle Ranchers and Bullock Hunters, and Whalers

In 1792, British Captain George Vancouver, arrived and anchored at Hawai‘i Island. Vancouver had previously visited the islands as a sailor on Captain Cook’s earlier voyages. When he came back as a captain, Vancouver brought gifts of cattle, goats, and sheep for the king, Kamehameha. Kamehameha instituted a kapu or strict taboo on these gifts of livestock. Anyone caught harming the livestock could be put to death. As a result, the cattle and goats and sheep multiplied copiously, especially in the north of Hawai‘i Island. Many walls and enclosures had to be built to protect the people’s cultivated crops from destruction by the animals. In 1803, the horse was also introduced to the island (Bergin 2004). After the kapu over the cattle was lifted in 1815, the king appointed the American newcomer, John Palmer Parker, to be his authorized cattle hunter. Cordy explains how bullock hunters were brought in to shoot wild cattle in the māmane zone. The years of unbridled cattle roaming in this zone expanded the traditional extent of the grasslands. Parker capitalized on this and spread his ranch into these upper elevations:

In the 1820s–1830s, bullock hunters entered the area and shot wild cattle which lived above the ‘ōhi‘a-koa forest or woods. These hunters lived in the places above the woods for short periods. A result of the presence of cattle was severe destruction of the upper limits of the ‘ōhi‘a-koa forest... The damage evidently did increase the grasslands of upper Mauna Kea. After the 1840s, Parker Ranch spread into these grasslands. (Cordy 1994:88)

The hunting of animals, and especially the salting and corning of beef and the procurement of hides and tallow, became a booming industry. This business was notably fueled by the demand from the visiting whaling ships. It should be noted that while the foreign ships of whalers and sandalwood traders and others were docked to replenish the supplies that they needed from the island, they simultaneously introduced their foreign goods there. Among these introduced goods was the commodity of metal, which had a particular effect on the lands of Ka‘ohe Mauka. The preference for metal tools and metal as a raw material to make tools meant that the manufacture of and demand for stone use diminished immensely. “Adze quarrying rapidly halted with the availability of metal... [and] land use in the Upper Slopes of Mauna Kea changed” (Cordy 1994:88), as the traditional quarries were abandoned and their associated shrines to the deities of the summit found silence.

Sandalwood Traders

It should be pointed out that unlike whalers who visited with their ships and had an indirect impact to the interior of Hawai‘i Island, the sandalwood traders directly transformed the uplands because of the main product they were trading. Between approximately 1815 and 1826, sandalwood or ‘iliahi (*Santalum* spp.) was actively harvested in the upland forest lands of the Hawaiian Islands for export to China (Cuddihy and Stone 1990:38). Thousands of trees were taken from the upland slopes of Kohala and Mauna Kea and transported by foot to Kawaihae for shipping to Honolulu and beyond. Native testimony describing the boundary of Waikōloa bordering Ka‘ohe Ahupua‘a on the west speaks of cutting sandalwood in the region.

Kiai, sworn:... I am well acquainted with that part of the boundary and the rest of it also. I have travelled the whole line personally. Used to hunt for uwau and neene [nēnē], and to cut sandal wood in that part of the country...(Records from Proceedings of Boundary Commission; in Maly and Maly 2002:87)

Missionaries

In 1820, a year after Kamehameha I passed away, the first missionaries arrived in the islands. Leading the cause to evangelize the Pacific were the American Board of Commissioners for Foreign Missions (ABCFM) and the London Mission Society. The landing of the ABCFM on Hawai‘i’s shores in 1820 could not have come at a more opportune time. With the recent death of Kamehameha I, his son Liholiho became the new king, Kamehameha II, and soon after that, King Kamehameha II abolished the ancient traditional religion (Ellis 1963).

For a while, during the 1800s, the population of Hāmākua was concentrated near the churches of Waipi‘o and Waimanu (Cordy 1994:10).

Ka‘ohe Mauka and the Changes in Land Tenure

It was during the reign of Kamehameha III, or King Kamehameha III, in the mid-1800s, as the Hawaiian kingdom became increasingly exposed to outside influences, that the Hawaiian monarchy faced a crossroads of major change. Dr. David Keanu Sai describes the predicament that King Kamehameha III faced:

Kamehameha III’s government stood upon the crumbling foundations of a feudal autocracy that could no longer handle the weight of geo-political and economic forces sweeping across the islands. Uniformity of law across the realm and the centralization of authority had become a necessity. Foreigners were the source of many of these difficulties. (Sai 2008:62)

Moffatt and Fitzpatrick (1995) state that “Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land ownership.” Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850:

The Mahele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom --- the government, the chiefs, and the *hoa‘āina*. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups... Following the Mahele, the only group with an undefined interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Beamer 2008:194,195)

Although the Māhele had specifically set aside lands for the King, the government, and the chiefs, this did not necessarily alienate the *maka‘āinana* from their land. On the contrary, access to the land was fostered through the reciprocal relationships which continued to exist between the commoners and the chiefs. Perhaps the chiefs were expected to better care for the commoners’ rights than the commoners themselves who arguably might have been less informed of foreign land tenure systems. Indeed, the *ahupua‘a* rights of the *maka‘āinana* were not extinguished with the advent of the Māhele, and Beamer points out that there are “numerous examples of *hoa‘āina* living on Government and Crown Lands Post-Mahele which indicate the government recognized their rights to do so” (Beamer 2008:274). Beamer (2008:274) elaborates as follows:

Hoa‘āina who chose not to acquire allodial lands through the Kuleana Act continued to live on Government and Crown Lands as they had been doing as a class previously for generations. Since all titles were awarded, “subject to the rights of native tenants.” The *hoa‘āina* possessed habitation and use rights over their lands.

For those commoners who did seek their individual land titles, the process that they needed to follow consisted of filing a claim with the Land Commission; having their land claim surveyed; testifying in person on behalf of their claim; and submitting their final Land Commission Award to get a binding royal patent. However, in actuality, the vast majority of the native population never received any land commission awards recognizing their land holdings due to several reasons such as their unfamiliarity with the process, their distrust of the process, and/or their desire to cling to their traditional way of land tenure regardless of how they felt about the new system. In 1850, the king passed another law, this one allowing foreigners to buy land. This further hindered the process of natives securing lands for their families.

Regarding the lands of Ka‘ohe Mauka, it does not appear that there were any land claims awarded in the district. This would make sense since the people of Hāmākua traditionally lived at the lower slopes and came up to Ka‘ohe Mauka less frequently, primarily to gather resources.

The Sugar Industry and Its Effects

Following the Resident-Alien Act in 1850 which allowed foreigners to “purchase (for the first time) fee simple lands in the islands... title to much of the land, which had only recently been made available to Hawaiian alii and commoners, is lost forever as it is passed into the hands of the newly arrived” (Hall 1998:54). This did not have an immediate effect on Ka‘ohe Mauka because most of the foreign land purchases were at the lower elevations. However, with regard to the greater Hāmākua District, the effects came about quickly and very noticeably. With the availability of land for purchase and the consequential increase in agricultural speculation by the newly arrived, Hāmākua and other districts around the island saw the proliferation of sugar industry ventures. Immigrants from Asia, Europe, and the America were recruited to work in the sugar plantations, and by 1890, there was a population of 5,002 in Hāmākua District (Cordy 1994:10). However, there were no sugar plantations in Ka‘ohe Mauka in the project area vicinity.

Around the same time, closer to the turn of the century, the mongoose was brought to the islands to manage the rat population which was harming the crops. However, the mongoose ended up being detrimental to the native birds instead. Whereas before the arrival of the mongoose, the ‘ua‘u “nested in great numbers in the lava between Mauna Kea and Mauna Loa... the nesting sites were no longer occupied after being invaded by the mongoose (Henshaw 1902:120). These petrels and other native birds in the lands of Ka‘ohe Mauka all became prey to the mongoose, and that meant far fewer to hunt for food or for featherwork.

Historic Maps

Historic maps help to paint a picture of a region in times past and illustrate the changes that have taken place there over the years. Unfortunately, after searching through archives, only one map was found that shows the upland portion of the ahupua‘a and the project area vicinity. This map was drawn by C.J. Lyons in 1891 (Figure 7). It is titled, “Kaohe and Humuula, Hawaii,” and underneath that title, it says, “Government Survey Map.” This map shows the enormity of Ka‘ohe when combined with its Mauka portion. Pā‘auhau is illustrated as the only other Hāmākua ahupua‘a which climbs across the Mauna Kea slopes, but it does not reach the summit nor cross the interior plateau like Ka‘ohe Mauka does. Several other ahupua‘a of Hāmākua are also labeled, much smaller in size and hugging the coast until Hāmākua District meets with the Hilo District. That Hāmākua-Hilo boundary is marked, as well. And along that Hāmākua-Hilo boundary, the Hilo ahupua‘a of Humu‘ula is shown flanking Ka‘ohe Mauka all the way to the uplands of Mauna Loa.

Regarding Ka‘ohe Mauka specifically, there are very interesting things to note from this map. The saddle portion of the ahupua‘a between Mauna Kea and Mauna Loa is labeled “Barren.” North of that is drawn the “Road from Waimea to Kalaiehu.” This is probably the old trail from Waimea to Kala‘i‘ehu and on to Hilo, which may have later served as a course for the modern Saddle Road. Surveyor notes compiled in 1869 describe the intended route of the cart road from Waimea to Hilo as “already a good natural road from Waimea to a point known as Kalaeha [Kala‘i‘ehu] on the S.E. side of Mauna Kea” (Maly and Maly 2002:119–120). A section of this historic route between Waiki‘i and Kilohana (in upper Waikōloa Ahupua‘a) is said to follow a pre-existing Hawaiian foot trail (Maly and Maly 2002:117).

Along the western boundary line of Ka‘ohe Mauka, it is written: “This Boundary fixed by Grant to S.P. Parker.” If this is the S.P. Parker of Parker Ranch, then the annotation corroborates the claim written in the Historic Land Use portion of this report, that during the time of the kapu on cattle, the expansion of the grasslands reached into the upper slopes of Mauna Kea. It was Samuel Parker who was commissioned to reign in the unbounded cattle, and as a result, he eventually extended his personal ranch into the upper grasslands. Therefore, the story about the cattle, the upper grasslands, and Samuel Parker, agree with the annotation on the map along the western boundary line that this boundary was fixed by Samuel Parker. A final interesting note is that the cartographer for this map of Ka‘ohe Mauka is C.J. Lyons, the son of the early missionary to Hawai‘i Island named Lorenzo Lyons. Lorenzo Lyons was the person in charge of overseeing all of the applications that the people put in for lands in Hāmākua, which would include Ka‘ohe Mauka:

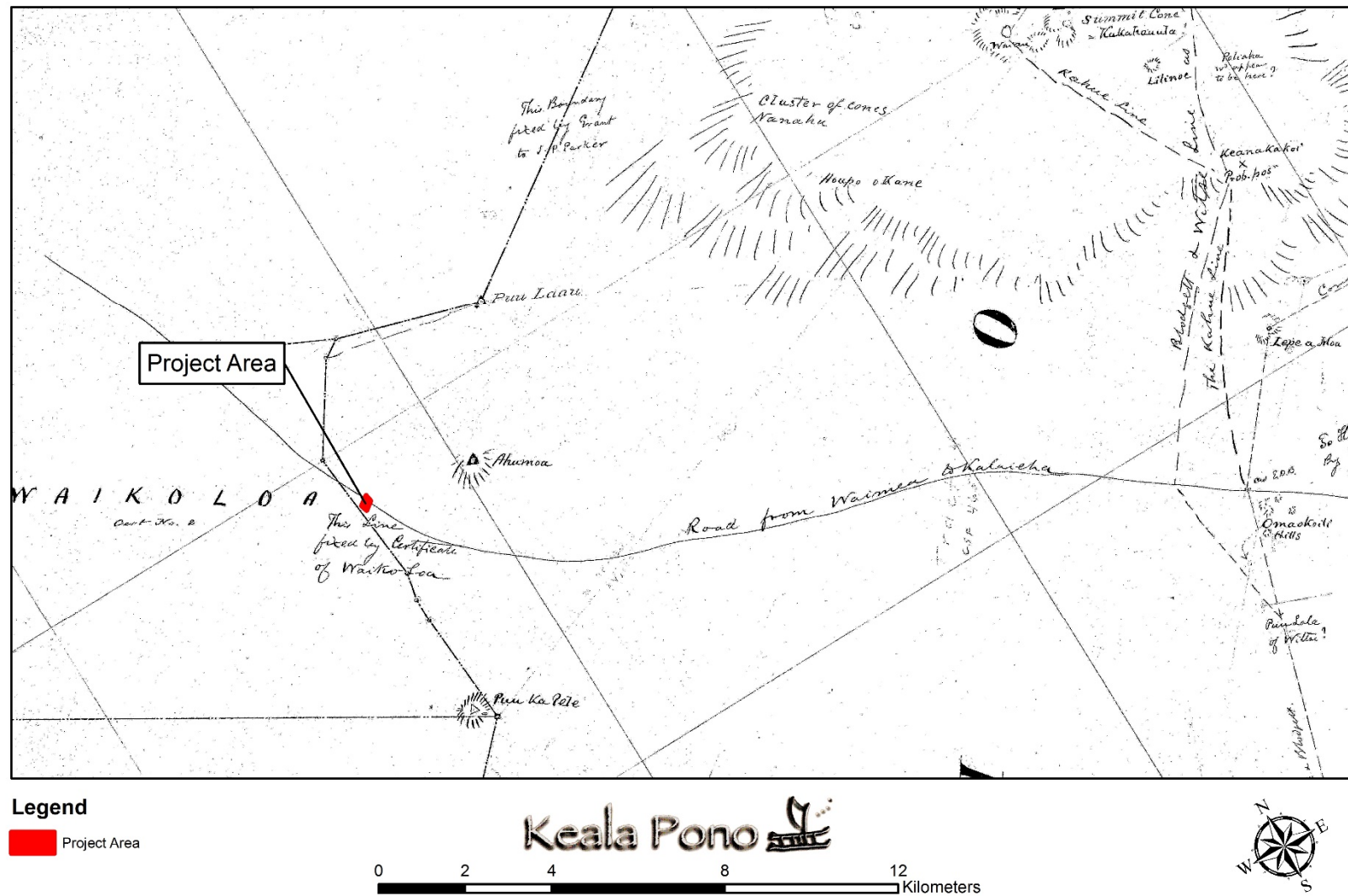


Figure 7. Portion of a historic map showing the project area vicinity (Lyons 1891).

In the minutes of the Privy Council, Book 6, page 368, is the following interesting item regarding [land] survey matters: “The Reverend L. Lyons, of Waimea, Hawaii, having expressed in his letter of the 6th inst., a willingness and a desire to assist in selling lands to natives in Hamakua, Hawaii, and having offered his services gratuitously from his love to the people and his wish that they may obtain lands: ‘Therefore: *Resolved*, that the Minister of Interior be, and is hereby advised and to refer to Reverend L. Lyons all applications for land in Hamakua.’” (Hobbs 1935:43).

Contemporary History

The 19th century ended with the overthrow of the Hawaiian monarchy and the subsequent annexation of the Hawaiian Islands by the United States of America. For the next few decades, nothing significant happened in the lands of Ka’ohe Mauka. Then, during the World War II era (ca. 1943–1945) the U.S. military chose to maintain a camp on Ka’ohe Mauka’s interior plateau. This military camp was named Camp Pohakuloa, and it allowed for training activities at an anti-tank range, an artillery range and an impact area (Langlas et al. 1999:55).

Also in 1943, the U.S. Government constructed the old Saddle Road to allow troops to move into the interior in case of a subsequent attack (Langlas et al. 1999:55). After World War II, in the 1950s, the Pohakuloa Training Area (PTA) was officially established as a training facility, which at that time included over 116,000 acres of land under lease and ownership by the U.S. Government. Within today’s PTA, remnant pre-contact trails, and perhaps their ancient trail markers, still exist. In addition, many more recently constructed trails are utilized across the plateau today, perpetuating an important land use for this interior area in the same way it was used in the days of old.

Another important thing to mention regarding the contemporary history of Ka’ohe Mauka is the controversy regarding the use of the summit area of Mauna Kea. Currently the summit is the platform for academic and scientific institutions and their astronomical telescopes. The astronomers claim the need for newer and better telescopes to study outer space. However, a coalition of Native Hawaiian interest groups backed by strong public support want to return to the dignity and sacredness of the mountain back to traditional ways before it became an academic research area. This matter is ongoing and has been in and out of the court system.

Previous Archaeology

Cordy explains that there are two main types of archaeological features, which are trails and temporary campsites, that should be found in Ka’ohe Mauka’s saddle region:

Historical and archaeological information identify two main uses for this [Inland Plateau] subregion which is located far inland, indeed virtually in the center of the island. Major mountain trails were used by travelers to cross this subregion... The other use of this subregion seems primarily to have been to hunt the petrel --- although nēnē, feather birds, and forest products were also collected. People likely came up to the subregion on the main trails and then headed-off into its interior areas. Campsites in caves, used only once in some cases, are scattered through the older more accessible pahoe-hoe flows of the subregion nearer the Kona border. These campsites date back to the A.D. 1000s-1200s on existing archaeological information. Since the petrels nested in the summer months and the nēnē also moved up to higher elevations during these months, it is quite likely that this was the season when these camps were predominantly used. (Cordy 1994:116)

No previous archaeological research has been conducted within the current project site. However, it would be appropriate here to mention the immense archaeological research already conducted for two Ka’ohe Mauka areas: one mass of work pertains to PTA (Ka’ohe Mauka’s interior plateau region), and the other pertains to the summit area and slopes of Mauna Kea (Ka’ohe Mauka’s māmane zone and alpine zone).

Several archaeological projects have been conducted within PTA’s Keamuku Maneuver Area (KMA), located just west of Camp Kilohana (Figure 8 and Table 1). Two of these had no findings (Cox 1983, Wolforth et al.

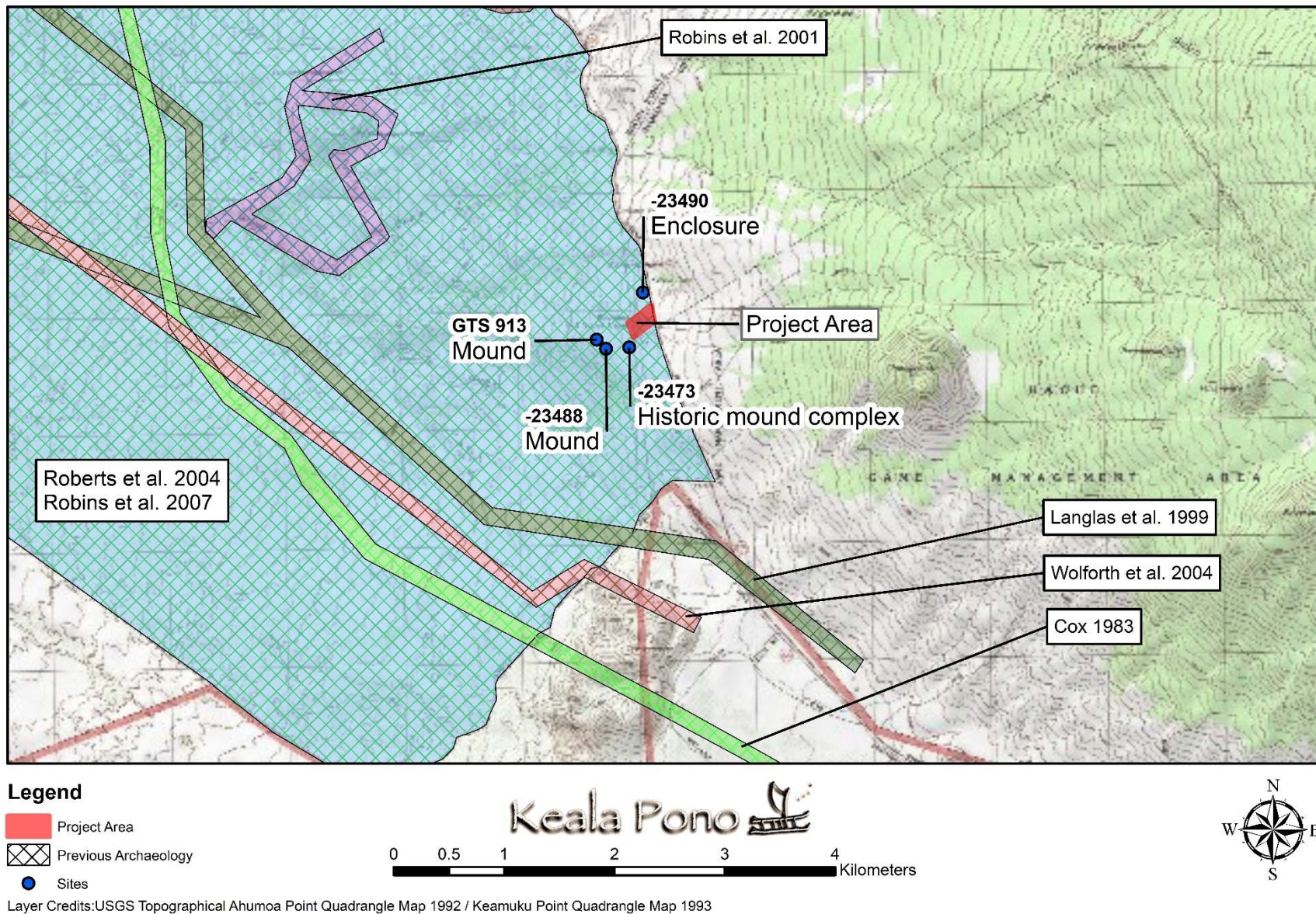


Figure 8. Previous archaeological studies in the vicinity of the project area and the cluster of archaeological sites near Camp Kilohana.

Table 1. Previous Archaeological Studies Near the Project Area

Author & Year	Location	Type of Study	Results
Cox 1983	PTA KMA	Reconnaissance Survey	No findings.
Langlas et al. 1999	PTA KMA	Archaeological Inventory Survey and Traditional Cultural Properties Study	Identified a historic road, a historic habitation site, and a complex of rock mounds.
Robins et al. 2001	PTA KMA	Reconnaissance Survey and Monitoring	Recorded a rock shelter and a habitation/agriculture complex.
Roberts et al. 2004	PTA KMA	Phase I Archaeological Survey	Identified 72 sites, most of which are historic. Four of these are near the project area: two mounds of undetermined age and function (GTS 913, SIHP 50-10-21-23488), a historic mound complex associated with land clearance for ranching (SIHP 50-10-21-23473), and an enclosure of undetermined age and function (SIHP 50-10-21-23490).
Wolforth et al. 2004	PTA KMA	Archaeological Inventory Survey	No findings.
Robins et al. 2007	PTA KMA	Phase II Testing	Tested 62 of the sites recorded by Roberts et al. (2004); six of these were pre-Contact in age; the others were historic.

2004). Langlas et al. (1999) identified three sites in PTA: the historic Waimea-Kona Belt Road (SIHP 50-10-21-20855), a historic habitation site near the road (SIHP 50-10-21-20854), and a mound complex (SIHP 50-10-12-21132). Robins et al. 2001 recorded two sites, both pre-Contact in age: a rock shelter (SIHP 50-10-33-22933) and a habitation/agricultural complex (SIHP 50-10-33-22929).

A large scale study at PTA's KMA identified 72 archaeological sites (Roberts et al. 2004), and further investigations were completed for 67 of the sites (Robins et al. 2007). Of the 72 sites, 83% were historic in age, and included military, ranching, agricultural, and habitation sites, as well as roads and markers. Only six sites were pre-Contact in age; these are agriculture, habitation, and rock art sites, and a cave burial. Of the many archaeological sites found within PTA's KMA, there are four that cluster around the project area (see Figure 8). These are two mounds of undetermined age and function [Ganda Temporary Site (GTS) 913, SIHP 50-10-21-23488], a historic mound complex associated with land clearance for ranching (SIHP 50-10-21-23473), and an enclosure of undetermined age and function (SIHP 50-10-21-23490).

Like Ka'ohē Mauka's saddle region, Cordy explains that temporary campsites abound in Ka'ohē Mauka's upper Mauna Kea region too, that is, in the ahupua'a's māmane zone and alpine zone. Although this area of Ka'ohē Mauka is not close to Camp Kilohana, it deserves mention for its quantity and uniqueness of archaeological resources. In addition to temporary campsites, other archaeological features found in this region include burials, quarries, and shrines:

Clearly, the historical and archaeological information indicate that this [subalpine] subregion of Hāmākua was used repeatedly --- for short period of time --- to extract special

high elevation resources, bury the dead, and make offerings at the summit shrines to deities associated with the mountain [Mauna Kea]. Collection of forest products (e.g., māmane) and hunting of birds (petrel and nēnē) appear likely to have occurred in the māmane forests up to the edge of the treeline at ca. 8,500–9,000 feet. Campsites for such collection have yet to be found but survey in the forest is extremely restricted. The quarry campsites, however, seem related to the quarry activities primarily taking place above the treeline at cold, high elevations where work is difficult even in modern conditions (Cordy 1994:102). These sites on Mauna Kea --- shrines, burials, quarries, campsites, and presumably forest collection/bird hunting sites --- are far, far away from their users' homes. (Cordy 1994:103)

Cordy points out importantly that in the less-studied upland and interior areas of Hāmākua, especially in Ka'ōhe Mauka, more archaeological research needs to be undertaken. "Archaeological fieldwork and dating is extremely limited, and more work is desperately needed. Considerable archival research with oral histories and histories is needed... More work is needed --- both research work and site preservation work" (Cordy 1994:118).

Summary of Background Research

The uplands of Ka'ōhe Mauka were mainly used for resource procurement in ancient times. Resources such as māmane, pili grass, birds, and stone for tool-making were highly sought after by the population in the lower regions. Mo'olelo of the project lands are associated with the legendary chief 'Umi and his son Keawe, and places of Ka'ōhe Mauka are mentioned in a chant honoring Kamehameha III, or Kauikeaouli. In the historic period, the region was used by the military and also for ranching and harvesting of sandalwood. Archaeological studies have identified mounds and an enclosure not far from Camp Kilohana.

Anticipated Finds and Research Questions

No archaeological resources are known to occur within the current project boundaries of TMK: (3) 4-4-015:005. Previous archaeological studies have identified a variety of sites in the upland regions of Ka'ōhe Mauka. Upland sites include pre-contact or traditional Hawaiian sites and complexes as well as historic features, mostly related to the military and ranching. Closest to the Camp Kilohana property are two mounds of undetermined age and function (GTS 913, SIHP 50-10-21-23488), a historic mound complex associated with land clearance for ranching (SIHP 50-10-21-23473), and an enclosure of undetermined age and function (SIHP 50-10-21-23490).

Research questions will broadly address the identification of the above archaeological resources and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Is there any evidence of pre-Contact use of the project area and what is the nature of that use?
2. Are there vestiges of historic use of the project area, such as military or ranching remnants?
3. If cultural resources are found, how do they relate to the settlement pattern of the wider region?

Once these basic questions are answered, additional research questions may be developed in consultation with SHPD, tailored to the specific kinds of archaeological resources that were identified.

METHODS

The archaeological inventory survey was conducted on November 17, 2016 by Windy McElroy, PhD, and Lizabeth Hauani'o, BA. McElroy served as Principal Investigator, overseeing all aspects of the project.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for the entire area. Archaeologists were spaced approximately 10 m apart. Of the 2.782 ha (6.875 ac.) survey area, 100% was covered on foot. Vegetation was mostly light, consisting of low grass and some large trees, which did not affect visibility of the ground surface (Figure 9). Archaeological sites were identified visually, with anything that appeared to be more than 50 years old documented as a site.

Test trenches (TR) were excavated in four locations throughout the project area. The excavation strategy was approved by SHPD beforehand via email. A mini excavator was used for excavation of the trenches (Figure 10). Vertical provenience was measured from the surface, and trenches were excavated to sterile deposits. Profiles were drawn and photographed, and sediments were described using Munsell soil color charts, a sediment texture flowchart (Thien 1979), and the U.S. Department of Agriculture soil manual. Trench locations were recorded with a 3 m-accurate Garmin GPSmap 62st, and all trenches were backfilled after excavation.

The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2–35). No materials were collected and no laboratory analyses were conducted.



Figure 9. Wide shot of the camp, showing vegetation. Orientation is to the north.



Figure 10. Excavation of TR 3 with mini excavator. Orientation is to the north.

RESULTS

Pedestrian survey and subsurface testing were conducted in the 2.782 ha (6.875 ac.) project area. One archaeological site, SIHP 50-10-21-30631, a historic fire ring, was identified. Excavation of four test trenches did not yield any evidence of subsurface archaeological deposits or features. Two historic structures occur within the project area, however no further documentation was requested from the SHPD architecture branch for the buildings.

Community Consultation

A cultural impact assessment (CIA) was conducted for this project. Three interviews with community members were completed. The interviewees were Grace Inamine, Ku‘ulei Keakealani, and Barbara Robertson.

Interviews with individuals knowledgeable about the project lands produced information on its rich cultural history. They noted traditional cultural practices such as hunting and plant gathering, and reminisced of times past. The interviewees were all supportive of the proposed improvements to Camp Kilohana, and several recommendations were offered: to practice respect; keep the ‘āina clean; allow more access to the camp for schools or other groups; and to keep the site as a camping area. These as well as any other concerns and recommendations brought forward by the community should be considered during all phases of the Camp Kilohana improvements.

Pedestrian Survey

The surface survey included 100% of the 2.782 ha (6.875 ac.) project area. One archaeological site, SIHP 50-10-21-30631, a historic fire ring, was identified in the southern portion of the camp (Figure 11). The site consists of a roughly circular fire ring made of lava rock and mortar, located in the southern part of the camp (Figures 12 and 13). The site measures 3 m in diameter and stands 49 cm above the surface at its highest point (Figure 14). The fire ring is still used by the Girl Scout camp today, and there is ash and burnt wood inside from recent fires. The ring is constructed with basalt cobbles and stones, stacked 3–4 courses high and set in mortar. Two metal pipes are visible at the base of the ring on the north and south sides.

The site is in fair to poor condition; most of the mortar surfacing is missing, and mortar and rocks are missing in various parts of the ring. The exact age of the fire ring is uncertain. There are two historic buildings nearby that were constructed during World War II, although it is likely that the fire ring was built after the Girl Scouts began using the property in the 1950s. The Girl Scouts were given permission to use Kilohana in 1952–1953 as a resident camp to determine the feasibility of the area for a camp. They purchased the site in 1954. SIHP 50-10-21-30631 retains integrity of location, feeling, and workmanship and is significant under Criterion d of HAR §13-275-6(b) (Table 3). It may yield further information on camp activity and use.

There are several buildings within the property, and as noted above, two structures are known to be more than 50 years old. These consist of the generator building and Pohaku Lodge, both of which were constructed during World War II. No further documentation was requested by the SHPD architecture branch, and the buildings will not be discussed further here.

Subsurface Testing

A subsurface testing plan was approved by SHPD before trenching began. The four trenches were excavated within the area proposed for construction to determine the presence or absence of subsurface archaeological deposits or material (Figure 15 and Table 2). No archaeological resources

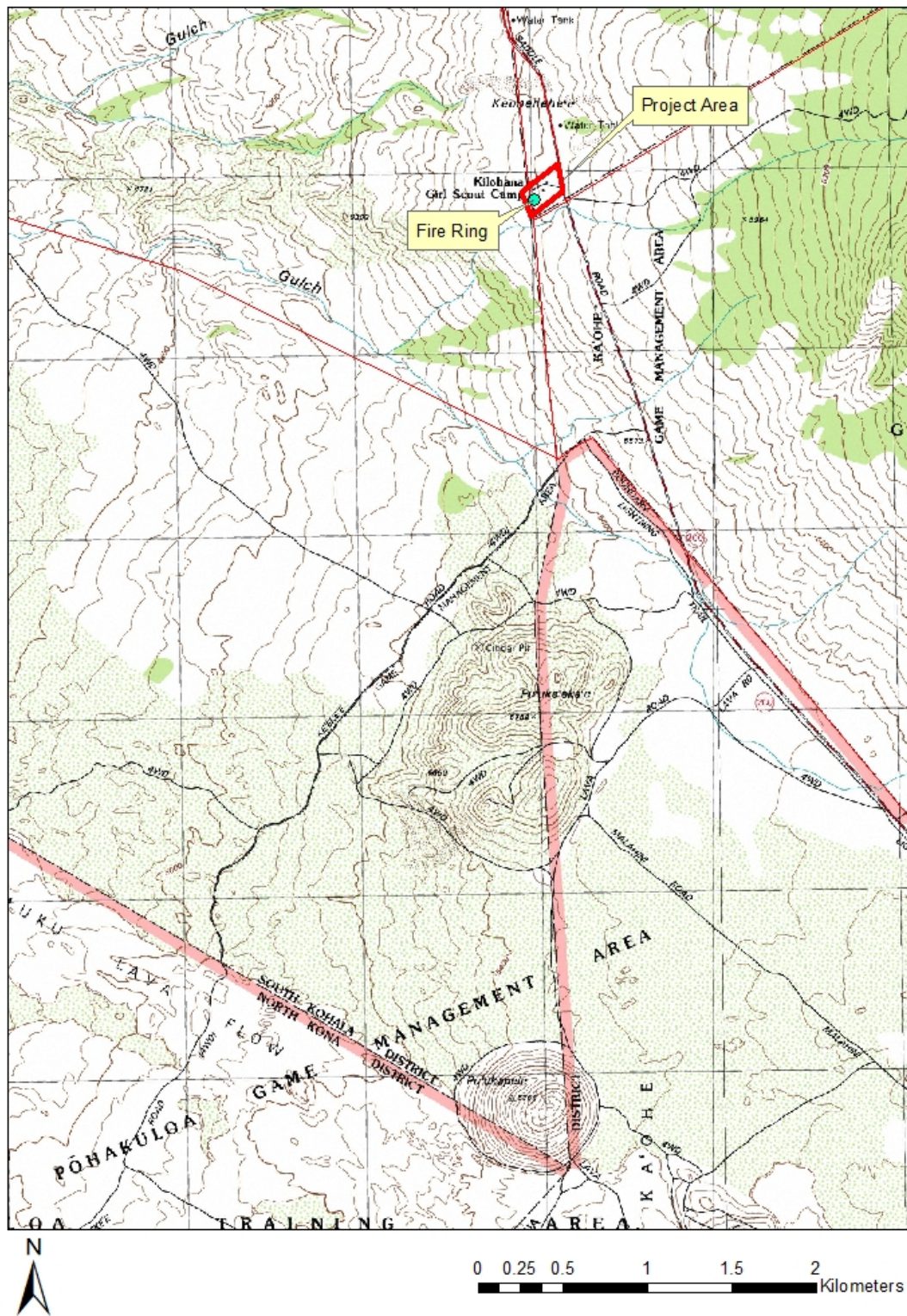


Figure 11. Location of Site 50-10-21-30631 on a 1992 Ahumoa Point quadrangle map. The project area is outlined in red.



Figure 12. Fire ring, SIHP 50-10-21-30631, facing northeast.



Figure 13. Fire ring, SIHP 50-10-21-30631, facing northwest.

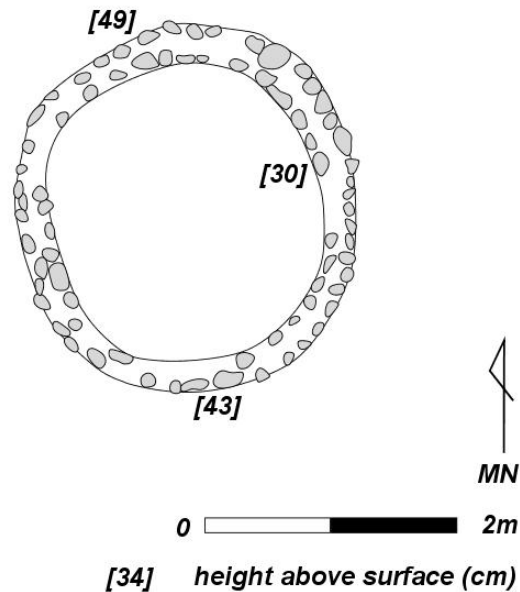


Figure 14. Plan view drawing of the fire ring, SIHP 50-10-21-30631.

were found, and stratigraphy consisted of a natural deposit above bedrock. Trenches were excavated to bedrock in all locations.

TR 1 was located just northwest of Baldwin Lodge. The trench measured 7.1 m long and 75 cm wide. It was excavated to 140 cm below surface (cmbs), where bedrock was encountered. Above the bedrock, stratigraphy consisted of a single natural deposit of 7.5YR 4/4 (brown) silt (Figures 16 and 17, see Table 2). No archaeological deposits or materials were identified.

TR 2 was placed to the southwest of TR 1, between the porta-potties and Baldwin Lodge. The trench measured 8.3 m long and 75 cm wide. It was excavated to 98 cmbs, where bedrock was encountered. Above the bedrock, stratigraphy consisted of a single natural deposit of 7.5YR 4/4 (brown) silt (Figures 18 and 19, see Table 2). No archaeological deposits or material were identified.

TR 3 was excavated to the southwest of TR 2. The trench measured 8.8 m long and 75 cm wide. It was excavated to 1.05 cmbs, where bedrock was encountered. Above the bedrock, stratigraphy consisted of a single natural deposit of 7.5YR 4/4 (brown) silt (Figures 20 and 21, see Table 2). No archaeological deposits or material were identified.

TR 4 was placed to the northwest of TR 3. The trench measured 10.4 m long and 75 cm wide. It was excavated to 91 cmbs, where bedrock was encountered. Above the bedrock, stratigraphy consisted of a single natural deposit of 7.5YR 4/4 (brown) silt (Figures 22 and 23, see Table 2). No archaeological deposits or material were identified.

Summary of Findings

Pedestrian survey of 2.782 ha (6.875 ac.) at Girl Scout Camp Kilohana yielded one archaeological site, a historic fire ring, SIHP 50-10-21-30631. Subsurface testing, consisting of four trenches, did not identify any subsurface cultural deposits or features. Stratigraphy consisted of a natural deposit above bedrock.

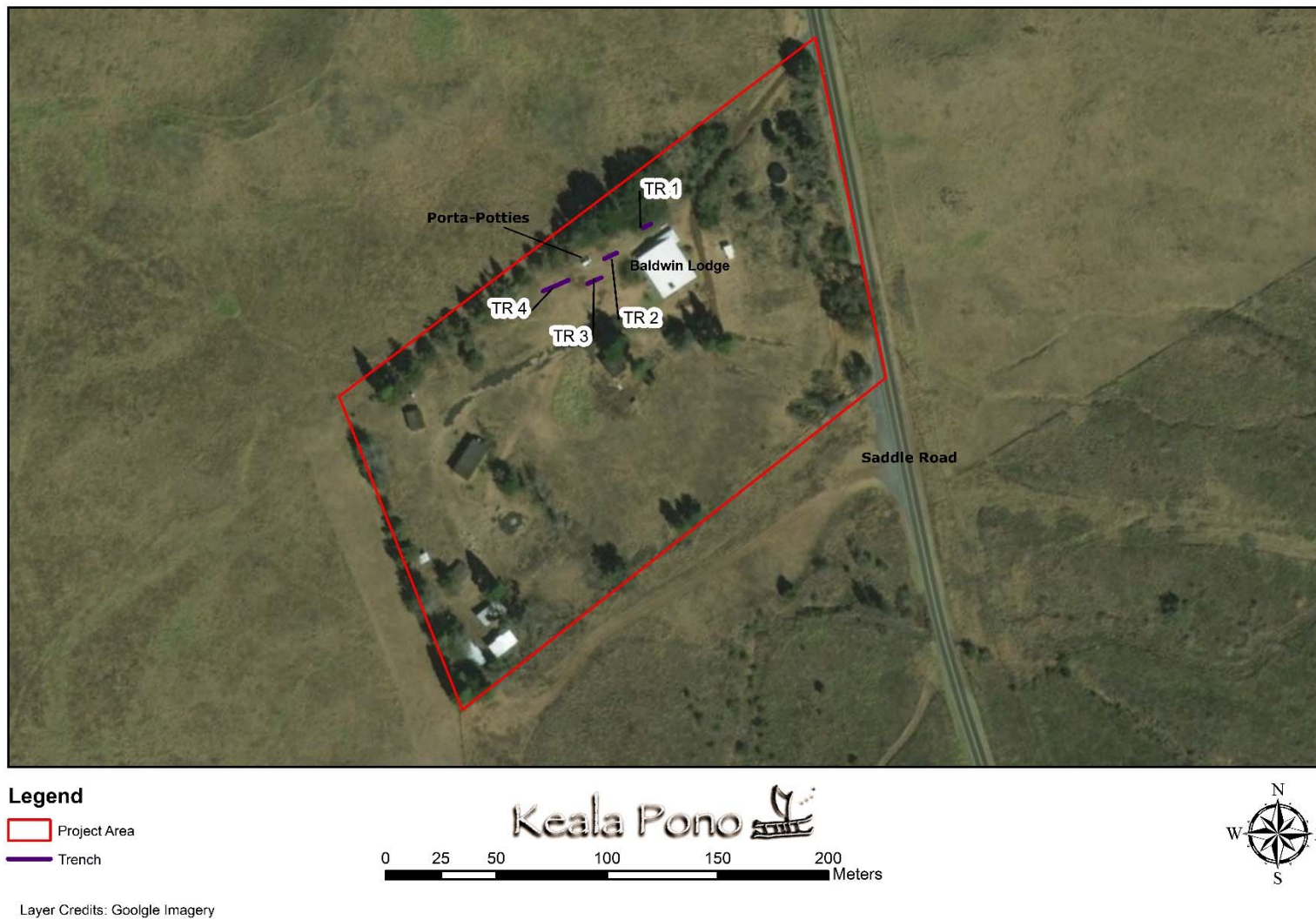


Figure 15. Location of trenches on aerial imagery.

Table 2. Sediment Descriptions

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 1	I	0–140+	7.5YR 4/4	Silt; 5% roots, 5% basalt cobbles; base of excavation.	Natural Volcanic Soil
TR 2	I	0–98+	7.5YR 4/4	Silt; 5% roots, 5% basalt cobbles; base of excavation.	Natural Volcanic Soil
TR 3	I	0–105+	7.5YR 4/4	Silt; 5% roots, 5% basalt cobbles; base of excavation.	Natural Volcanic Soil
TR 4	I	0–91+	7.5YR 4/4	Silt; 5% roots, 5% basalt cobbles; base of excavation.	Natural Volcanic Soil

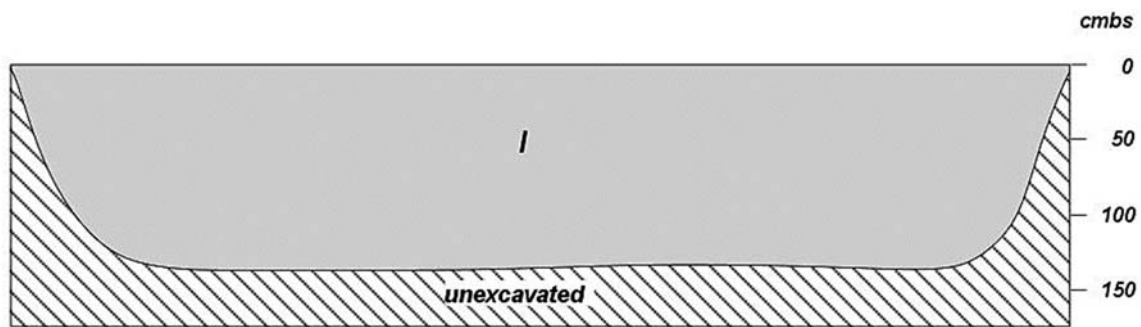


Figure 16. TR 1 north face profile drawing.



Figure 17. TR 1 north face photo.

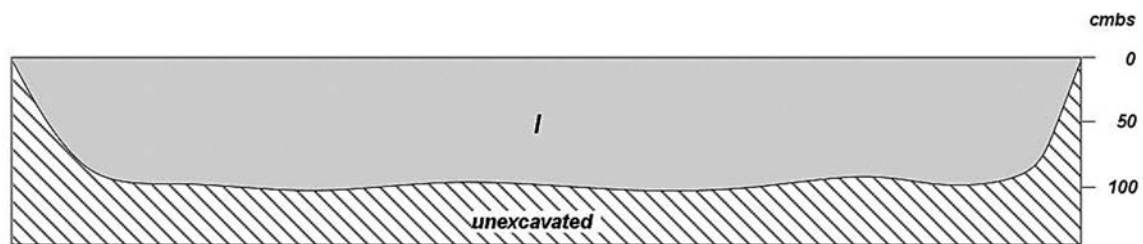


Figure 18. TR 2 north face profile drawing.



Figure 19. TR 2 north face photo.

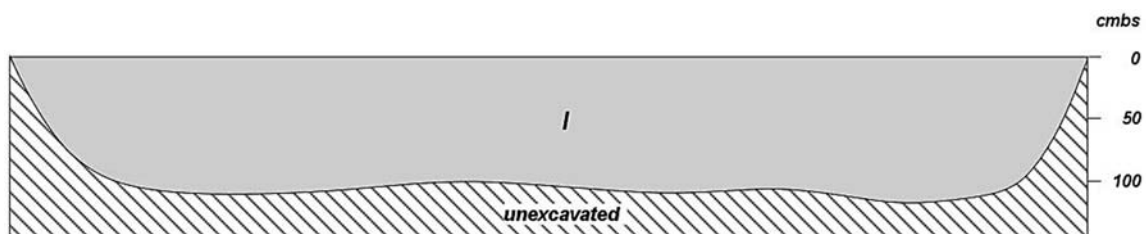


Figure 20. TR 3 north face profile drawing.



Figure 21. TR 3 north face photo.

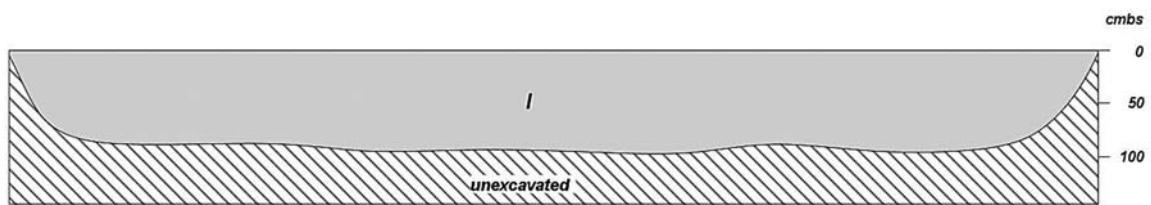


Figure 22. TR 4 north face profile drawing.



Figure 23. TR 4 north face photo.

CONCLUSION AND RECOMMENDATIONS

An archaeological inventory survey was conducted for the Kilohana Girl Scout Camp at TMK: (3) 4-4-015:005 in Ka'ohē Mauka Ahupua'a, Hāmākua District on the island of Hawai'i. Girl Scouts of Hawai'i is planning wastewater improvements for the camp. The archaeological work included pedestrian survey that covered 100% of the 2.782 ha (6.875 ac.) project area, as well as test excavations consisting of four trenches.

One archaeological site, SIHP 50-10-21-30631, a historic fire ring, was identified. Subsurface testing did not yield any evidence of subsurface archaeological features or deposits. Stratigraphy consisted of a natural deposit above bedrock.

Significance Determinations

To determine if a historic property is significant under Hawaii Administrative Rules (HAR) for historic preservation, or is eligible for National Register of Historic Places (NRHP) listing, it must be assessed for significance according to HAR §13-275-6(b):

(b) To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criterion:

(1) Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;

(2) Criterion "b". Be associated with the lives of persons important in our past;

(3) Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;

(4) Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history; or

(5) Criterion "e". Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

SIHP 50-10-21-30631 retains integrity of location, feeling, and workmanship and is significant under Criterion d of HAR §13-275-6(b) (Table 3). It may yield further information on camp activity and use. The recommended project effect determination is no historic properties affected, as construction will take place well away from the site. No further archaeological work is recommended. Given the lack of subsurface findings where construction will take place, archaeological monitoring is not recommended.

Table 3. Significance Determination

Site	Description	Function	Criterion	Justification	Recommendation
30631	Historic Fire Ring	Fire Control	D	May provide additional information about camp activity and use.	No Further Archaeological Work

REFERENCES

- Beamer, B.
2008 *Na wai ka mana? 'Ōiwi Agency and European Imperialism in the Hawaiian Kingdom*. Diss. University of Hawai'i, Honolulu.
- Bergin, B.
2004 *Loyal to the Land: The Legendary Parker Ranch, 750–1950, Aloha 'Aina Paka*. University of Hawai'i Press, Honolulu.
- Cordy, R.
1994 *A Regional Synthesis of Hāmākua District, Island of Hawai'i*. Historic Preservation Division, Department of Land and Natural Resources, Honolulu.
- Cox, D.W.
1983 *Preliminary Cultural Resources Reconnaissance Report for Tank Trail from Kawaihae to Pōhakuloa Training Area, Island of Hawai'i*. U.S. Army Corps of Engineers, Honolulu.
- Cuddihy, L.W. and C.O. Stone
1990 *Alteration of Native Hawaiian Vegetation, Effects of Humans, Their Activities and Introductions*. University of Hawaii Cooperative National Park Resources Studies Unit. University of Hawaii Press, Honolulu.
- Ellis, W.
1963 *Journal of William Ellis: Narrative of a Tour of Hawaii, or Owhyhee; with Remarks on the History, Traditions, Manners, Customs and Language of the Inhabitants of the Sandwich Islands*. Advertiser Publishing Company, Honolulu. Originally published 1827, London.
- Escott, G.G. and S. Keris
2009 *An Archaeological Inventory Survey Report For 600 Acres Located On Lands of Ke 'āmuku, Waikōloa Ahupua'a, South Kohala District, Hawai'i Island, Hawai'i, [TMK (3) 6-7-001:09]*. Scientific Consultant Services, Inc., Honolulu.
- Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delporte
2013 Online Rainfall Atlas of Hawai'i. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1.
- Girl Scouts of Hawai'i
2016 "Camp." <http://girlscouts-hawaii.org/camps/>
- Hall, W.T.
1998 *The History of Kailua, Hawaii*. Dolphin Printing and Publishing, Kailua.
- Henshaw, H. W.
1902 *Birds of the Hawaiian Islands*. Thos. G. Thrum, Honolulu.
- Hobbs, J.
1935 *Hawaii: a pageant of the soil*. Stanford University Press, Stanford.
- Kamakau, S. M.
1991 *Tales and Traditions of the People of Old: Na Mo'olelo a ka Po'e Kahiko*. Translated by Mary Kawena Pukui. Ed. by Dorothy B. Barrere. Bishop Museum Press, Honolulu.
1992 *Ruling Chiefs of Hawaii*. Revised Edition. The Kamehameha Schools Press, Honolulu
1996 *Ke Kumu Aupuni. 'Ahahui 'Olelo Hawai'i*, Honolulu. Originally published 1866–1868.
- Kanahele, P.K. and E.K.H. Kanahele
1997 *A Social Impact Assessment, Indigenous Hawaiian Cultural Values of the Proposed Saddle Road Alignments*. State of Hawai'i, Hawai'i Department of Transportation, Highways Division, Honolulu. www.mauna-a-wakea.info, accessed 2016.

- Langlas, C., T.R. Wolforth, and J. Head
1999 *The Saddle Road Corridor: An Archaeological Inventory Survey and Traditional Cultural Property Study for the Hawai'i Defense Access Road A-AD-6(1) and Saddle Road (SR 200) Project*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.
- Lyons, C.J.
1891 *Kaohe and Humuula. Hawaii*. Government Survey Map. Scale 500 ft. = 1 in. Register Map 1641.
- Maly, K. and O. Maly
2002 *He Wahi Mo'olelo No Ka 'Āina A Me Nā 'Ōhana O Waiki'i Ma Waikōloa (Kalana O Waimea, Kohala) A Me Ka 'Āina Mauna: A Collection of Traditions and Historical Accounts of the Lands and Families of Waiki'i at Waikōloa (Waimea Region, South Kohala), and the Mountain Lands, island of Hawai'i (TMK Overview Sheet 6-7-01)*. Kumu Pono Associates. Hilo, Hawai'i.
2003 *He Wahi Mo'olelo No Ponahawai A Me Punahoa Ma Hilo: A Collection of Traditions and Historical Accounts for Ponahawai and Punahoa, District of Hilo, Island of Hawai'i (TMK 2-3-44:19; 2-3-49:53; 2-3-37:01)*. Kumu Pono Associates, Hilo, Hawai'i.
- Moffat, R.M. and G.L. Fitzpatrick
1995 *Palapala 'aina: Surveying the Mahele*. Editions Limited, Honolulu.
- Nogelmeier, M.P.
2006 "Commentary." *The Epic Tale of Hi 'iakaikapoliopole*. Awaiaulu: Hawaiian Literature Project, Honolulu.
- Pukui, M.K.
1983 *Ōlelo No 'eau; Hawaiian Proverbs and Poetical Sayings*. Bernice P. Bishop Museum Special Publication No. 71. Bishop Museum Press, Honolulu.
- Pukui, M.K., S.H. Elbert, and E.T. Mookini
1974 *Place Names of Hawai'i*. University of Hawai'i, Honolulu.
- Roberts, A.K.S., J. Robins, and A. Buffum
2004 *Archaeological Surveys of Proposed Training Area for the Stryker Brigade Combat Team U.S. Army, Pōhakuloa Training Area, Island of Hawai'i, Hawai'i*. Garcia and Associates, Kailua, Hawai'i.
- Robins, J., M. Desilets, and A. Gonzalez
2007 *Intensive Phase II Survey for Significance Determinations of Cultural Resources, Ke'āmuku Land Acquisition Area (WPAA) for the Stryker Brigade Combat Team (SBCT), U.S. Army Pōhakuloa Training Area, Hawai'i Island, Hawai'i (TMK 3-6-7-001:03)*. Garcia and Associates, Kailua, Hawai'i.
- Robins, J., T. Torres, and S. Williams
2001 *Archaeological Reconnaissance Survey and Monitoring in Support of the Defense Environmental Restoration Program of Formerly Used Defense Sites (DERP FUDS) Activities at the Former Waikōloa Maneuver Area, Ahupua'a of Kawaihae 2, 'Ouli, Lālāmilo, Waikōloa and Pu'ukapu, South Kohala District, Hawai'i Island, Hawai'i*. Ogden Environmental and Energy Services, Inc., Honolulu.
- Sai, D.
2008 *The American Occupation of the Hawaiian Kingdom: Beginning the Transition from Occupied to Restored State*. Diss. University of Hawai'i, Honolulu.
- Sato, H.H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro, Jr.
1973 *Soil Survey of Island of Hawaii, State of Hawaii*. United States Department of Agriculture, Soil Conservation Service. Published in cooperation with the University of Hawaii Agricultural Experiment Station, Washington, D.C.
- Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson (editors)
2002 *Field Book for Describing and Sampling Soils, Version 2.0*. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.
- Thien, S.
1979 A Flow Diagram for Teaching Texture-By-Feel Analysis. *Journal of Agronomic Education* 8:54–55.

USGS (United States Geological Survey)

1992 Ahumoa Point Quadrangle, Hawai‘i [map]. Scale 1:24,000. 7.5 Minute Series. United States Department of the Interior, USGS, Reston, Virginia.

1993 Keamuku Point Quadrangle, Hawai‘i [map]. Scale 1:24,000. 7.5 Minute Series. United States Department of the Interior, USGS, Reston, Virginia.

Wolfe, E.W. and J. Morris

1996 *Geological Map of the Island of Hawai‘i*. USGS. Miscellaneous Investigations Series. Department of the Interior, Washington, D.C.

Wolforth, T., G. Escott, and L. McGerty

2004 *Inventory Survey for the Saddle Road Extension: Investigations into Resource Extraction in the middle Elevations of Waikōloa Ahupua‘a in Kohala, and Pu‘u Anahulu Ahupua‘a in Kona*. SCS/CRMS, Inc., Honolulu.

GLOSSARY

ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
‘āina	Land.
heiau	Place of worship and ritual in traditional Hawai‘i.
hoa‘āina	Native tenants that worked the land.
‘iliahi	<i>Santalum</i> spp., refers to all types of Hawaiian sandalwood.
leiomano	A traditional weapon composed of a large shark tooth embedded in a piece of wood.
Māhele	The 1848 division of land.
maka‘āinana	Common people, or populace; translates to “people that attend the land.”
māmāne	<i>Sophora chrysophylla</i> , a native high altitude tree found on the slopes of Mauna Kea and Mauna Loa. Trees grow to 50 ft. high and have yellow blossoms.
mauka	Inland, upland, toward the mountain.
mele	Song, chant, or poem.
mo‘olelo	A story, myth, history, tradition, legend, or record.
naio	<i>Myoporum sandwicense</i> , the bastard sandalwood native to Hawai‘i.
nēnē	<i>Branta sandwicensis</i> , Hawaiian goose endemic to Hawai‘i.
‘ohana	Family.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
oli	Chant.
pili	A native grass, <i>Heteropogon contortus</i> .
pu‘u	Hill, mound, peak.
‘ua‘u	<i>Pterodroma phaeopygia</i> , known commonly as the dark-rumped petrel, an endangered seabird.

APPENDIX: HISTORIC ARCHITECTURE RECONNAISSANCE-LEVEL SURVEY, CAMP KILOHANA